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#8
Agen 2671
Drawing

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Application No.: 09/751,673
Filed: December 29, 2000
Inventor(s):
Michael F. Deering

Examiner: Nguyen, Phy K.
Group/Art Unit: 2671
Atty. Dkt. No: 5181-54400

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, Alexandria, VA 22313-1450, on the date indicated below.

Jeffrey C. Hood

Signature 10/29/2003 Date

Title: Dynamically Adjusting a Sample-to-Pixel Filter to Compensate for the Effects of Negative Lobes

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Alexandria, VA 22313-1450

Sir/Madam:

Applicant hereby submits the formal drawings for the above-referenced application and requests that these drawings (Figures 1-31 on 35 sheets) be accepted for filing.

Respectfully submitted,

Jeffrey C. Hood
Reg. No. 35,198
ATTORNEY FOR APPLICANTS

Meyertons, Hood, Kivlin, Kowert & Goetzel PC
P.O. Box 398
Austin, TX 78767-0398
(512) 853-8800
Date: 10/29/2003

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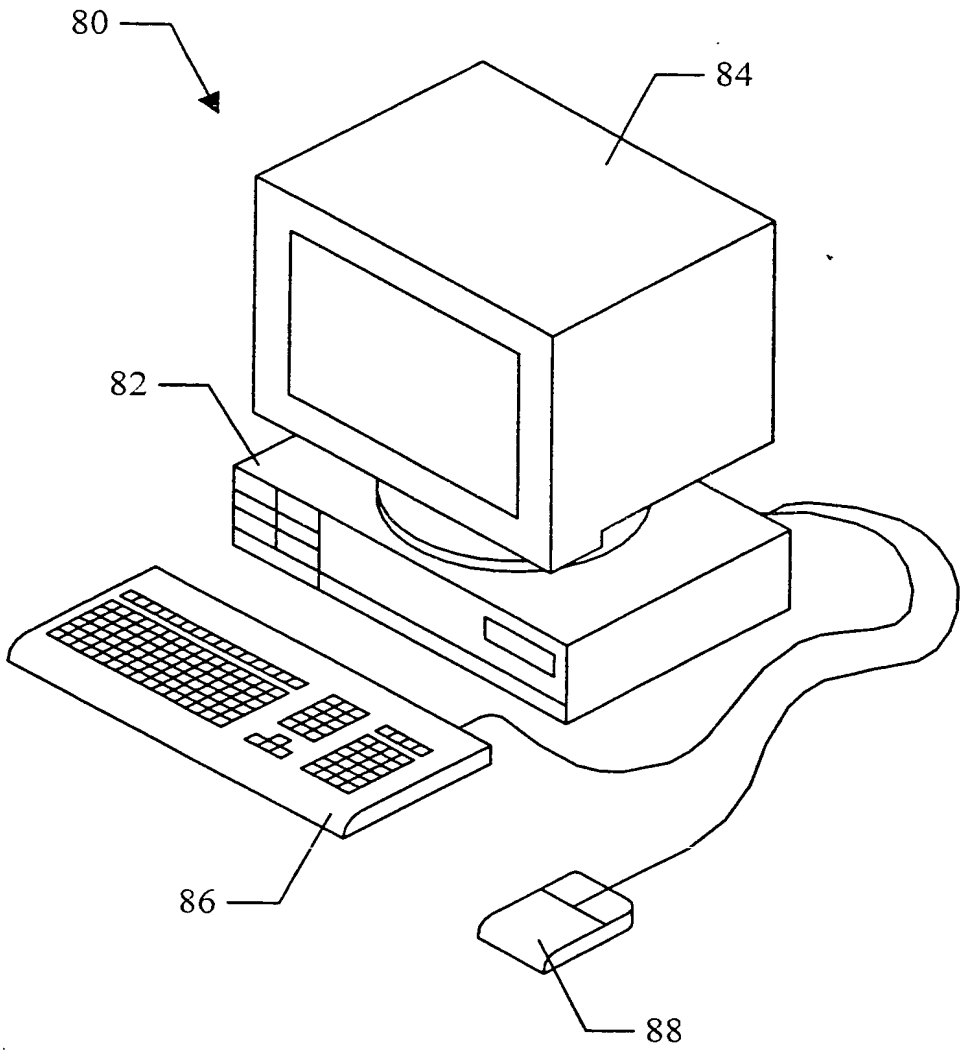

FIG. 1

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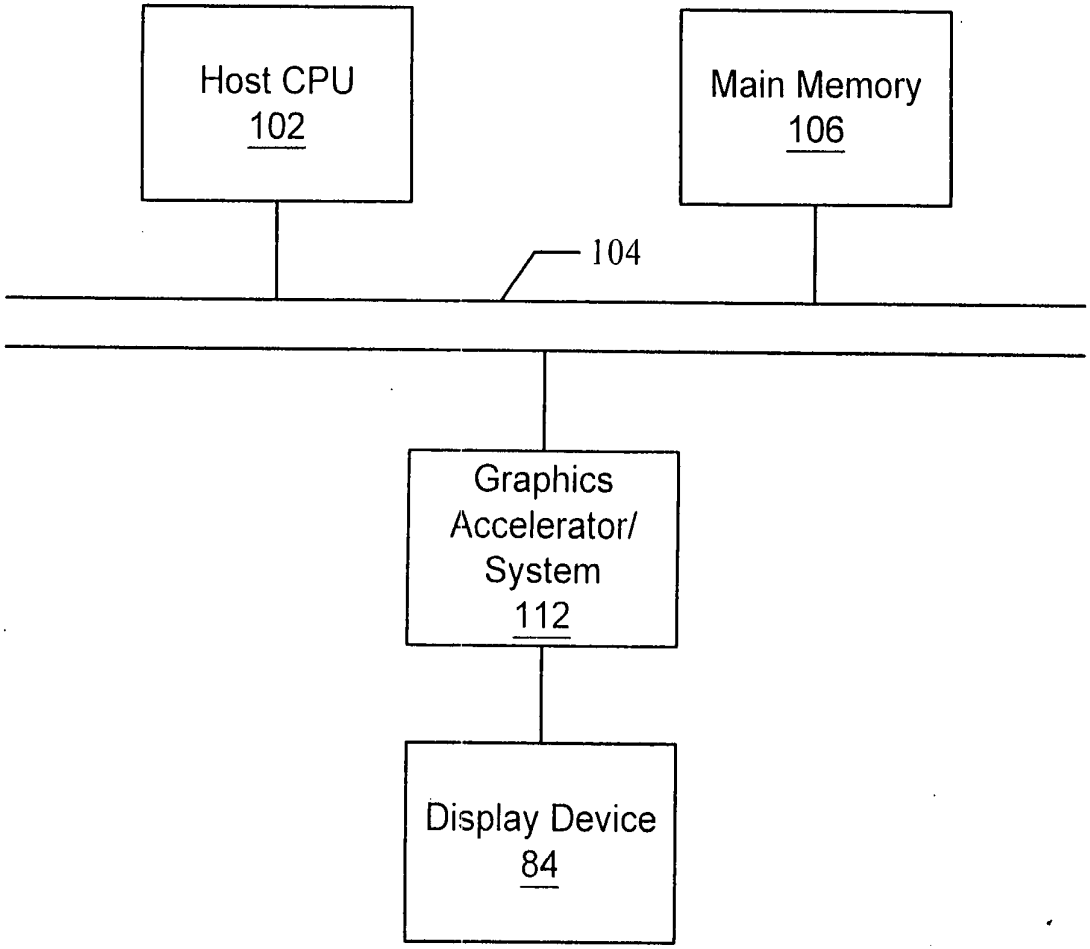

FIG. 2

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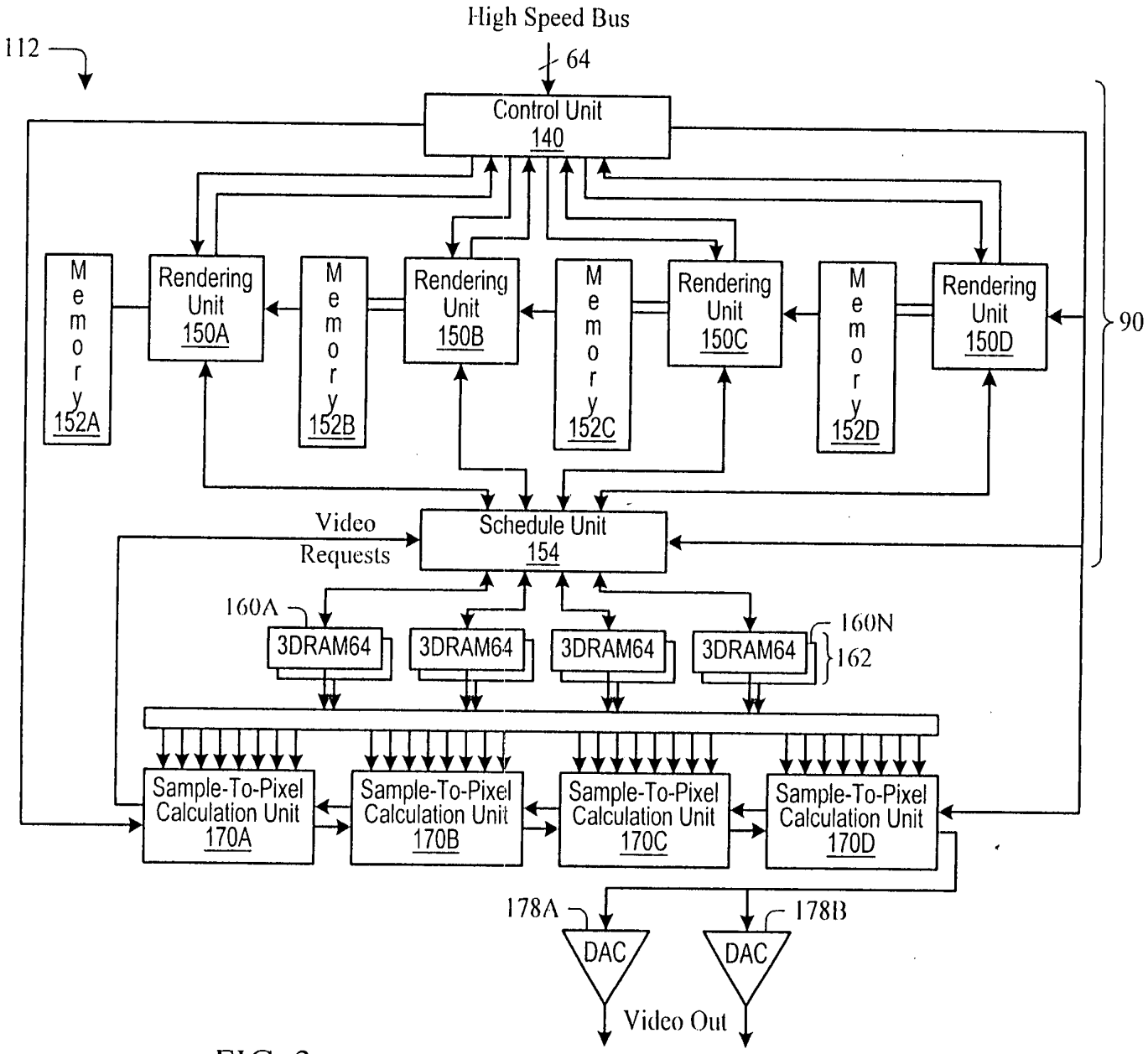

FIG. 3

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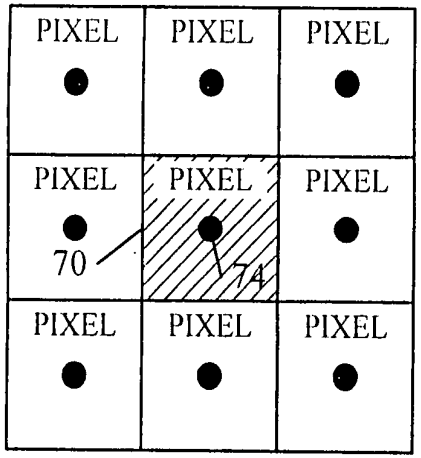

FIG. 4

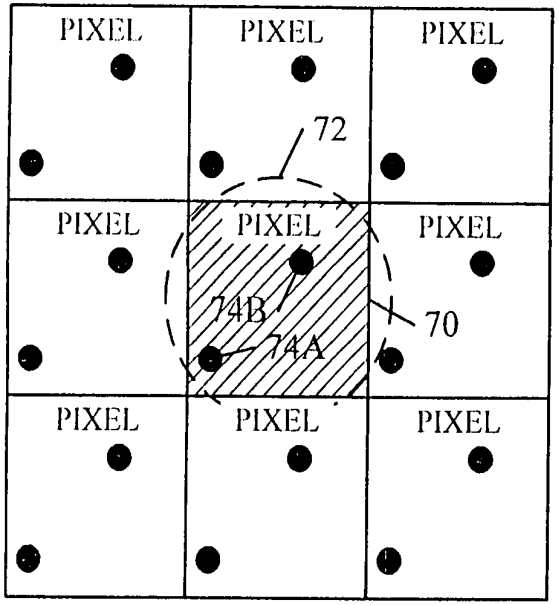

FIG. 5A

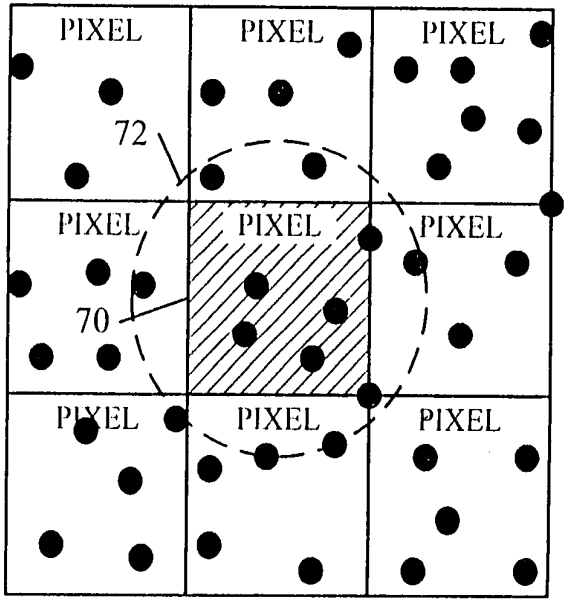

FIG. 5B

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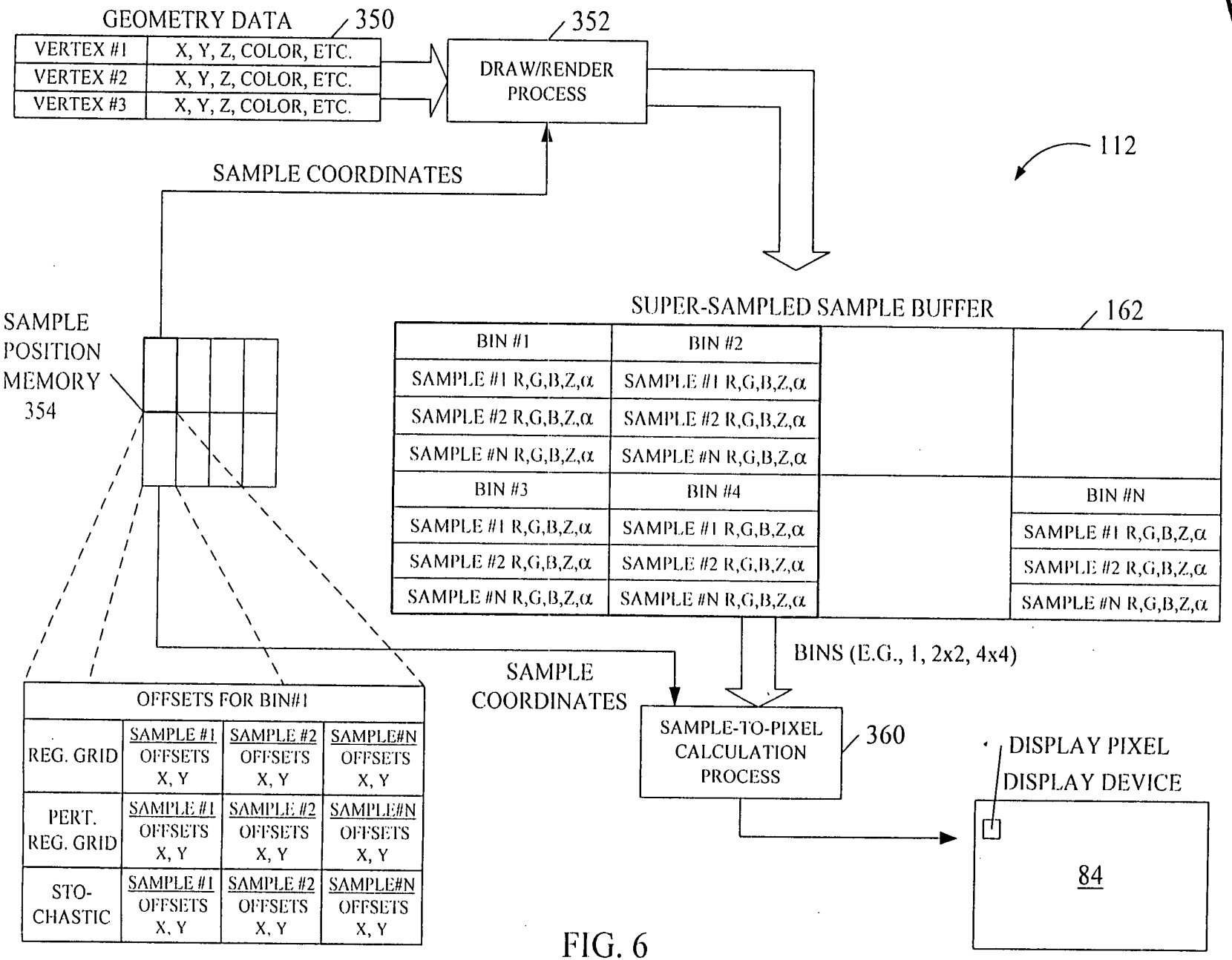

FIG. 6

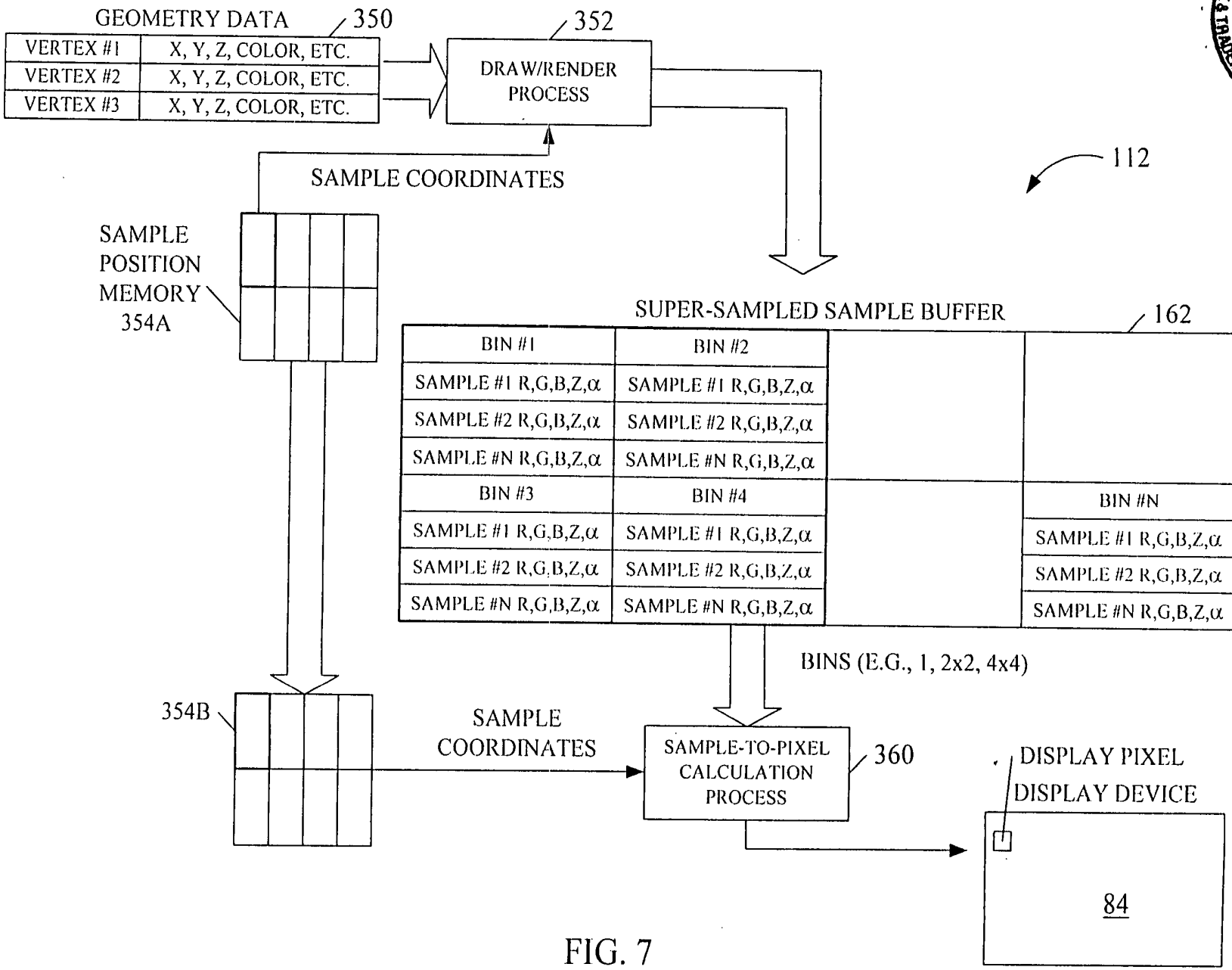
GEOMETRY DATA
350
VERTEX #1
X, Y, Z, COLOR, ETC.
VERTEX #2
X, Y, Z, COLOR, ETC.
VERTEX #3
X, Y, Z, COLOR, ETC.
352
DRAW/RENDER PROCESS
SAMPLE COORDINATES
112
SAMPLE POSITION MEMORY 354A
SUPER-SAMPLED SAMPLE BUFFER
162
BIN #1
BIN #2
SAMPLE #1 R,G,B,Z,α
SAMPLE #2 R,G,B,Z,α
SAMPLE #N R,G,B,Z,α
BIN #3
BIN #4
BIN #N
BINS (E.G., 1, 2x2, 4x4)
354B
SAMPLE COORDINATES
SAMPLE-TO-PIXEL CALCULATION PROCESS
360
DISPLAY PIXEL
DISPLAY DEVICE
84

FIG. 7

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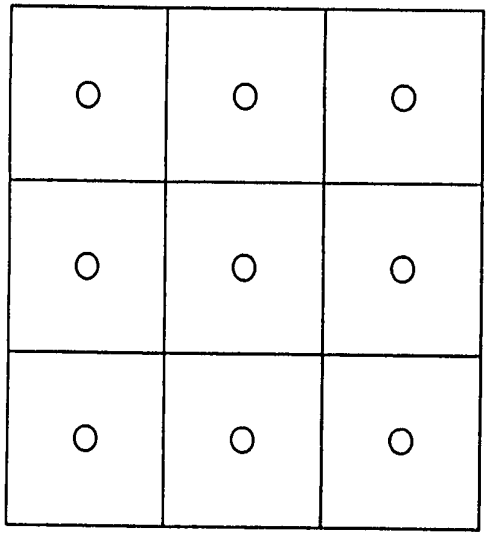
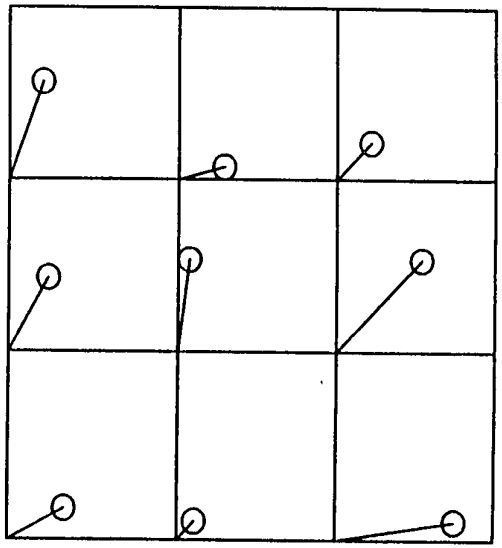
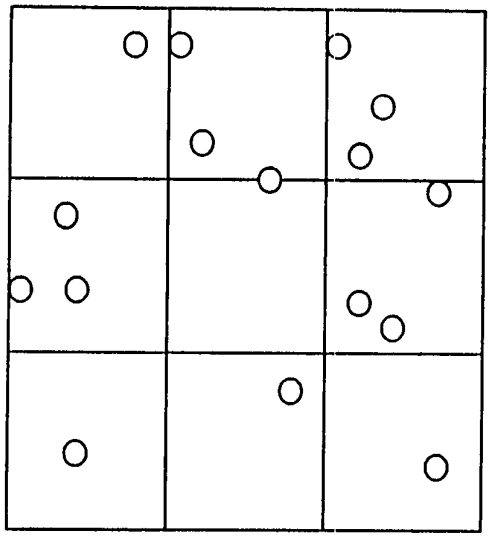


REGULAR GRID 190



192 PERTURBED REGULAR GRID



194 STOCHASTIC SPACING

FIG. 8

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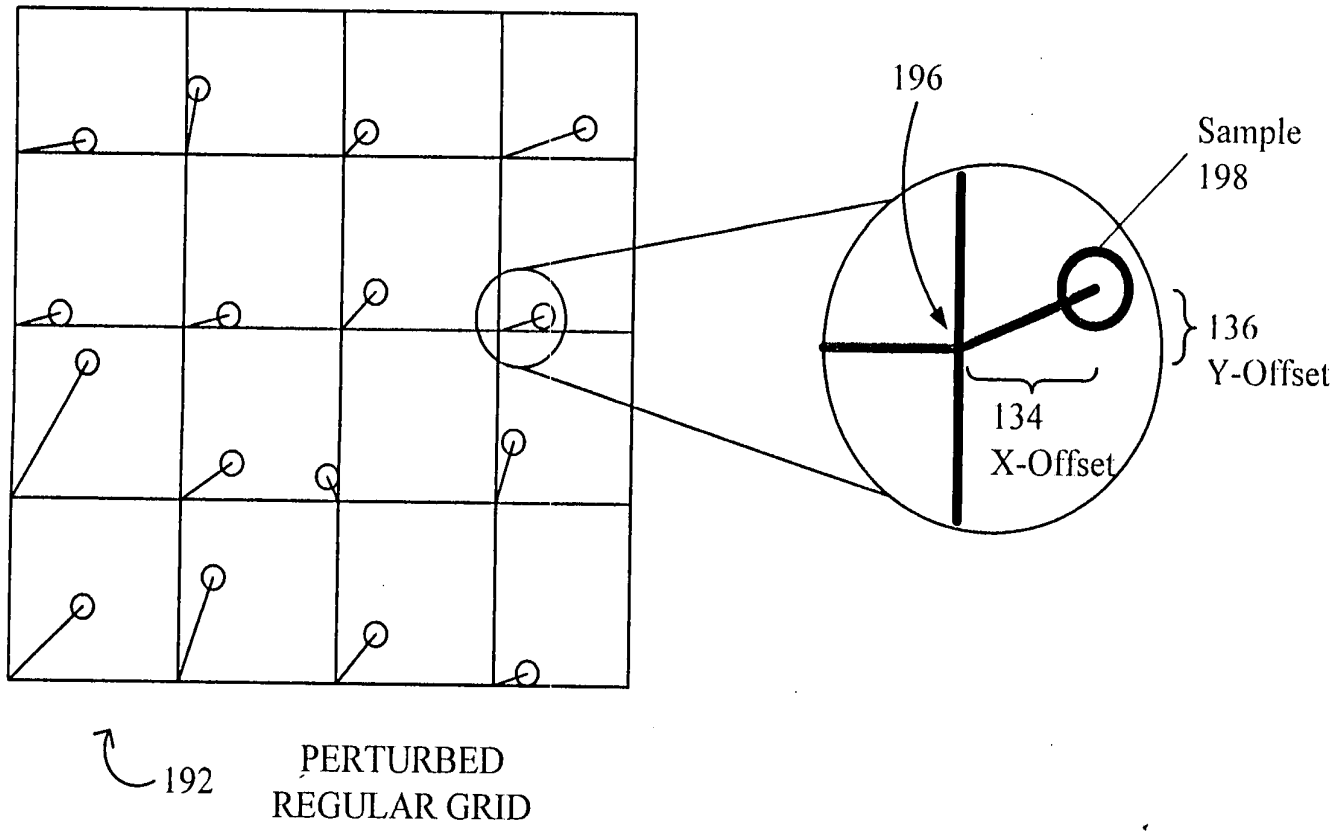

FIG. 9

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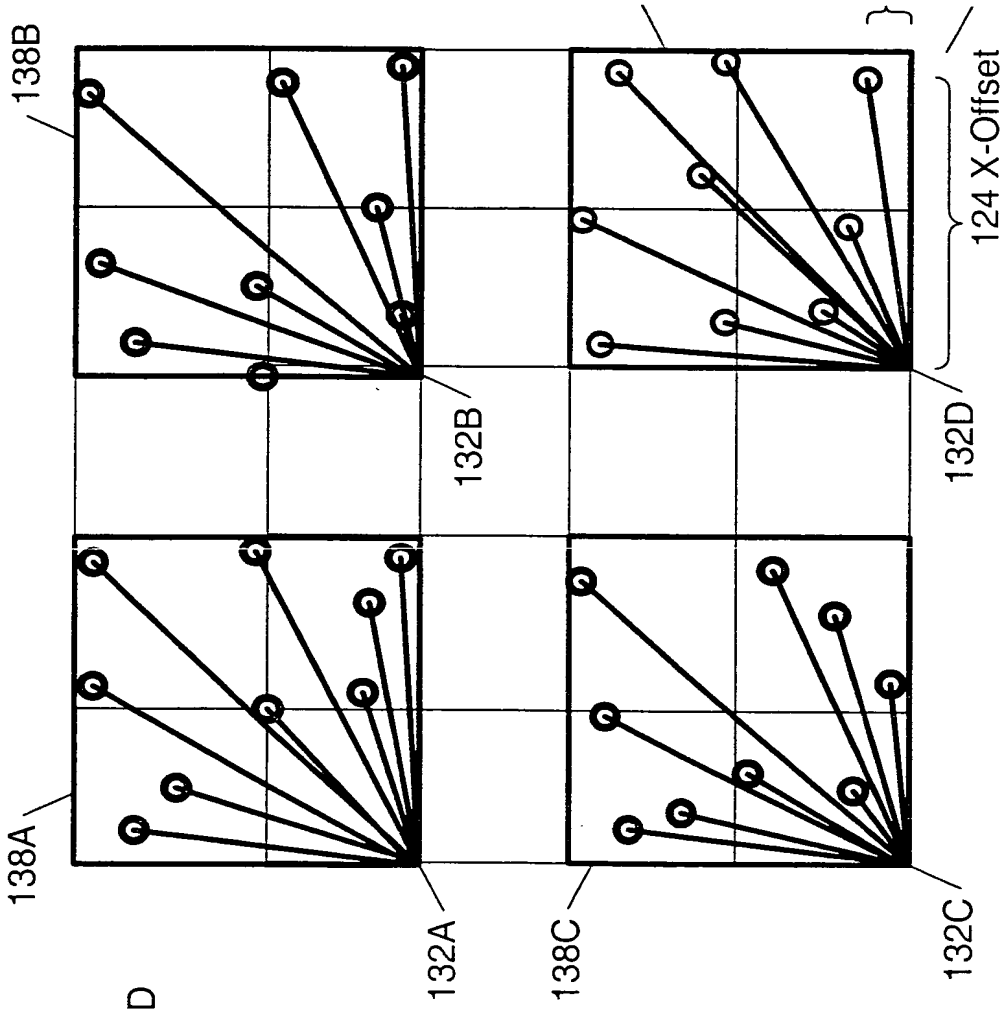

FIG. 10

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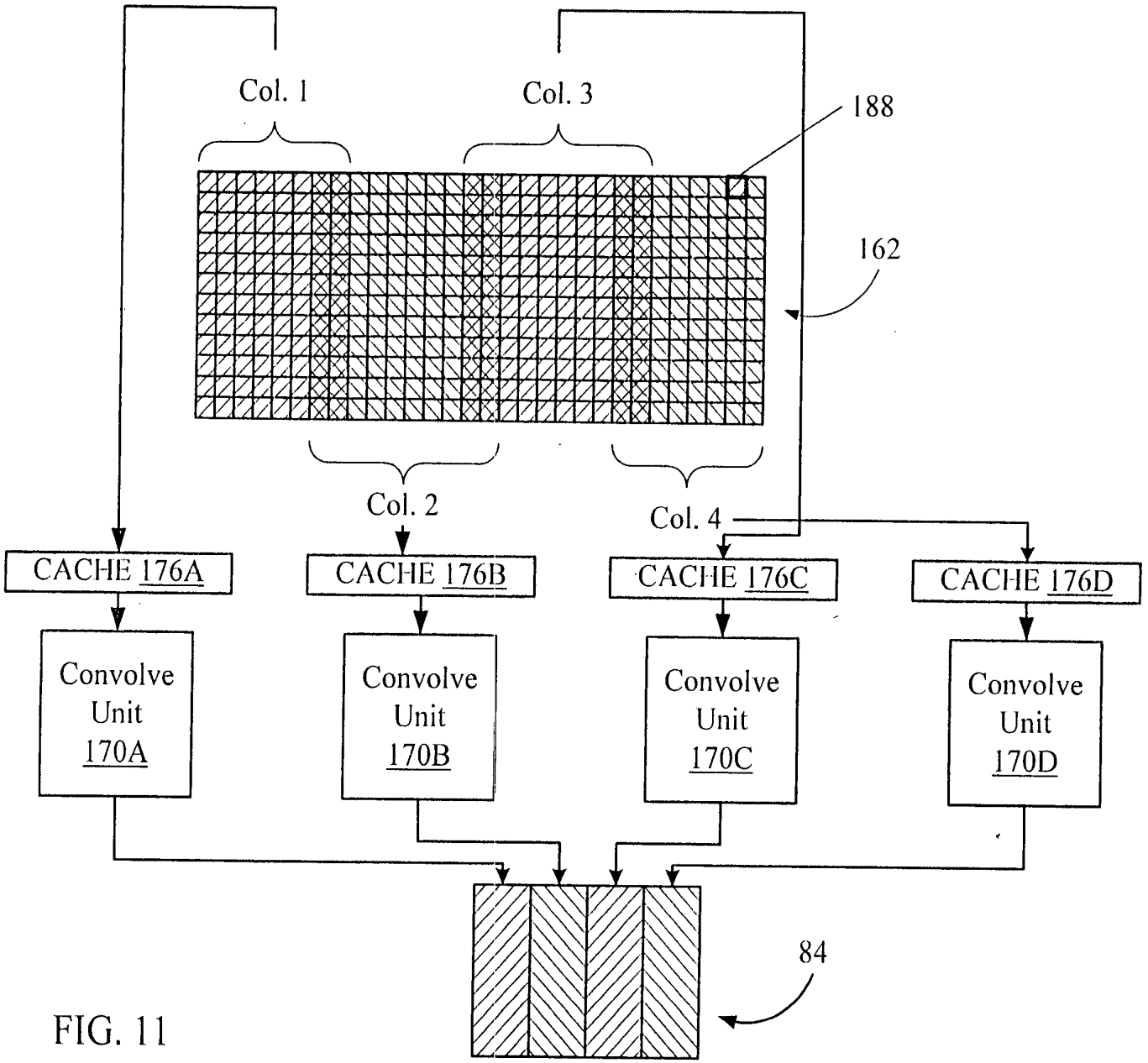

FIG. 11

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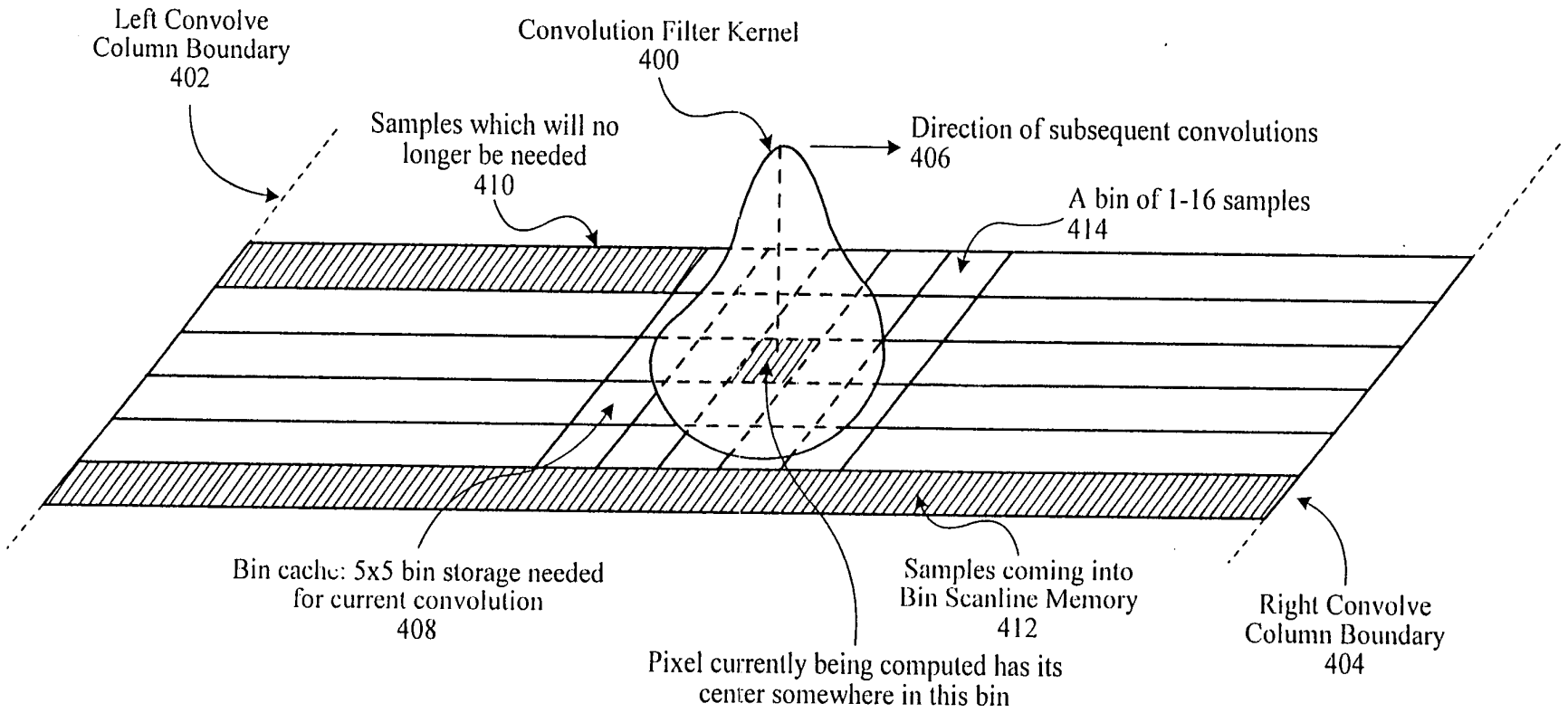

FIG. 11A

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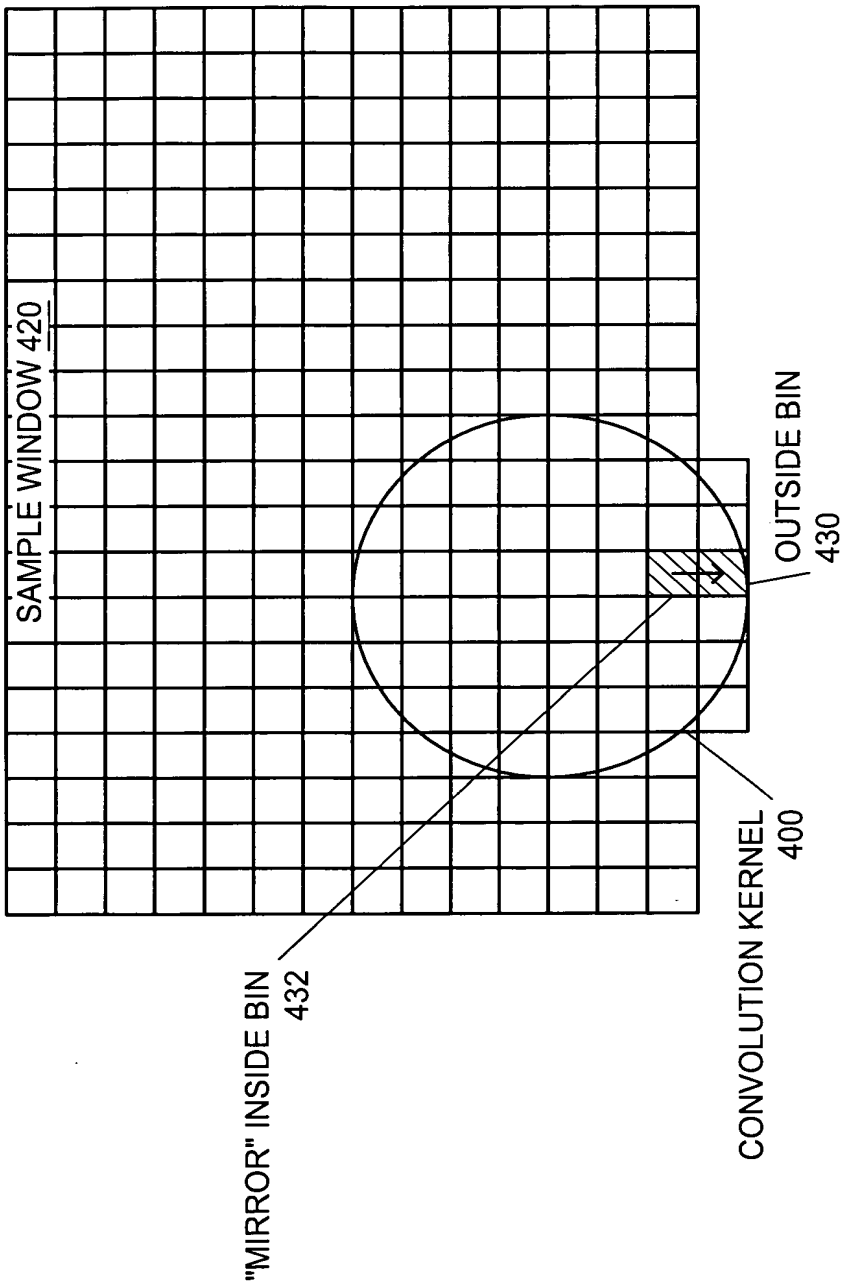

FIG. 11B

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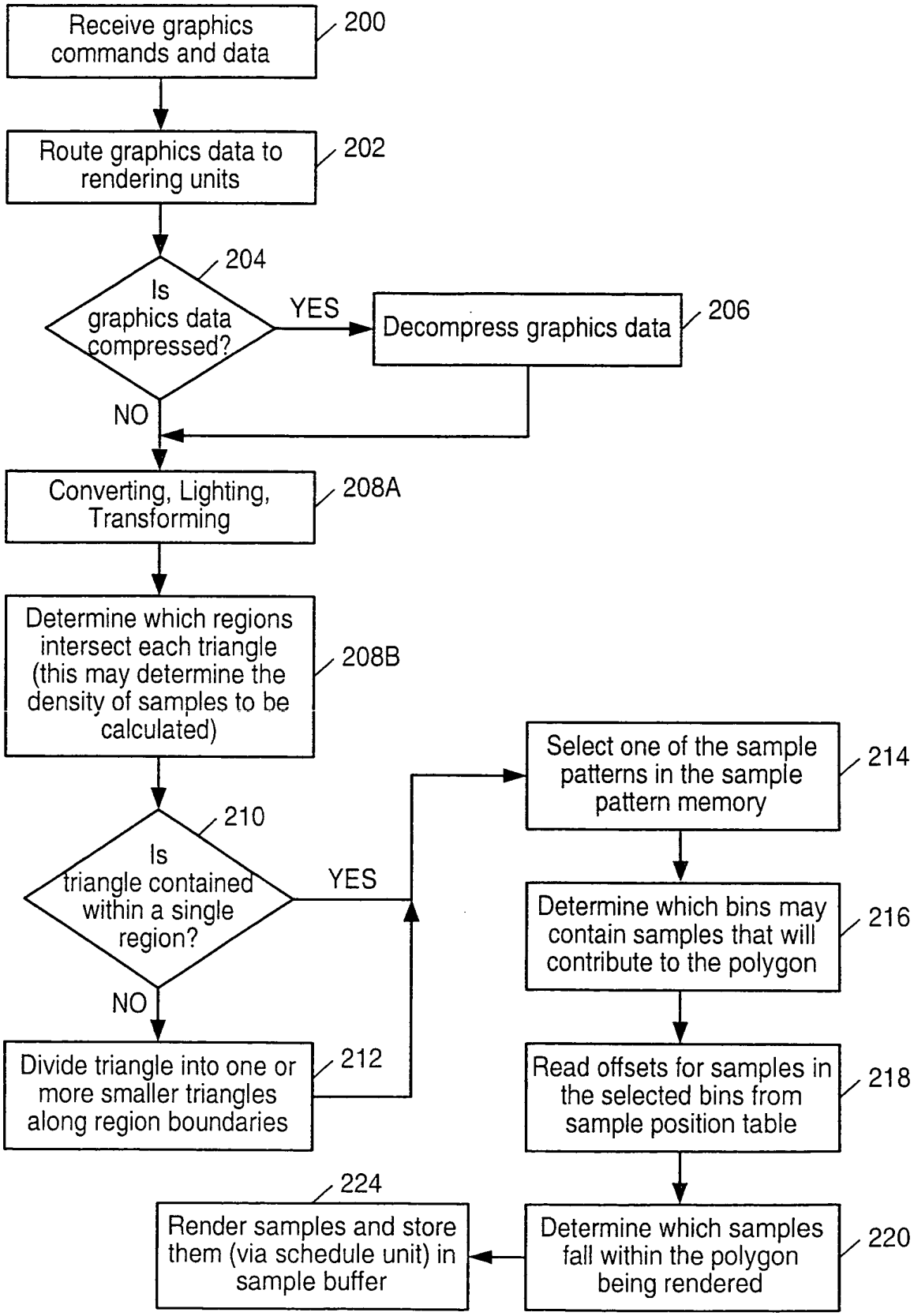

FIG. 12

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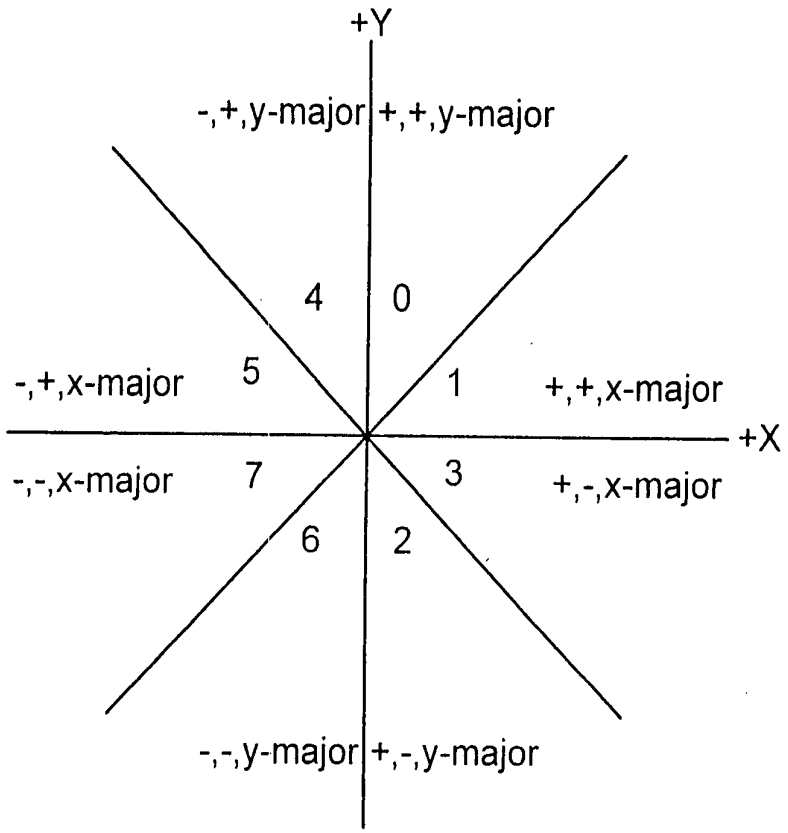

FIG. 12A

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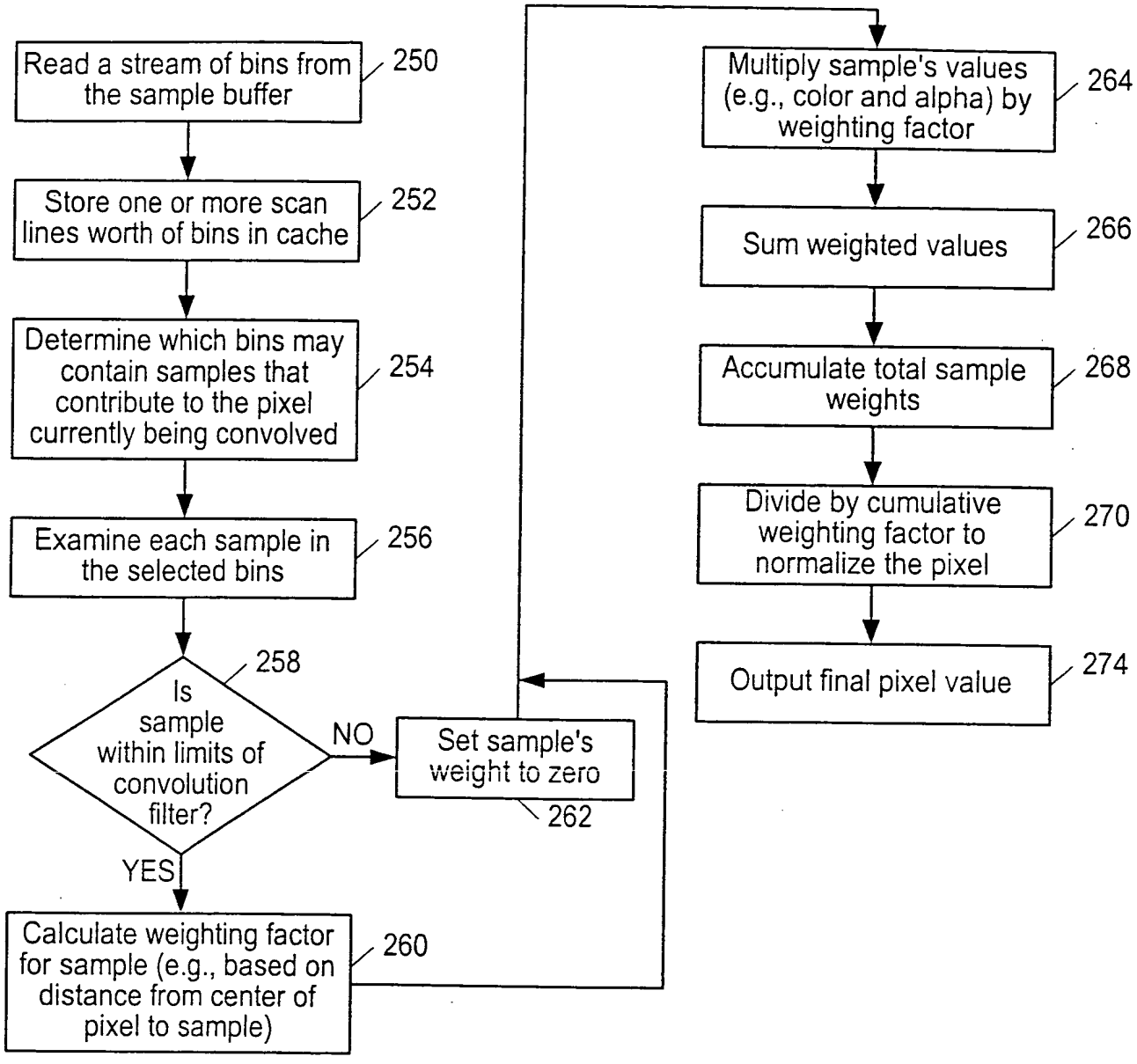

FIG. 13

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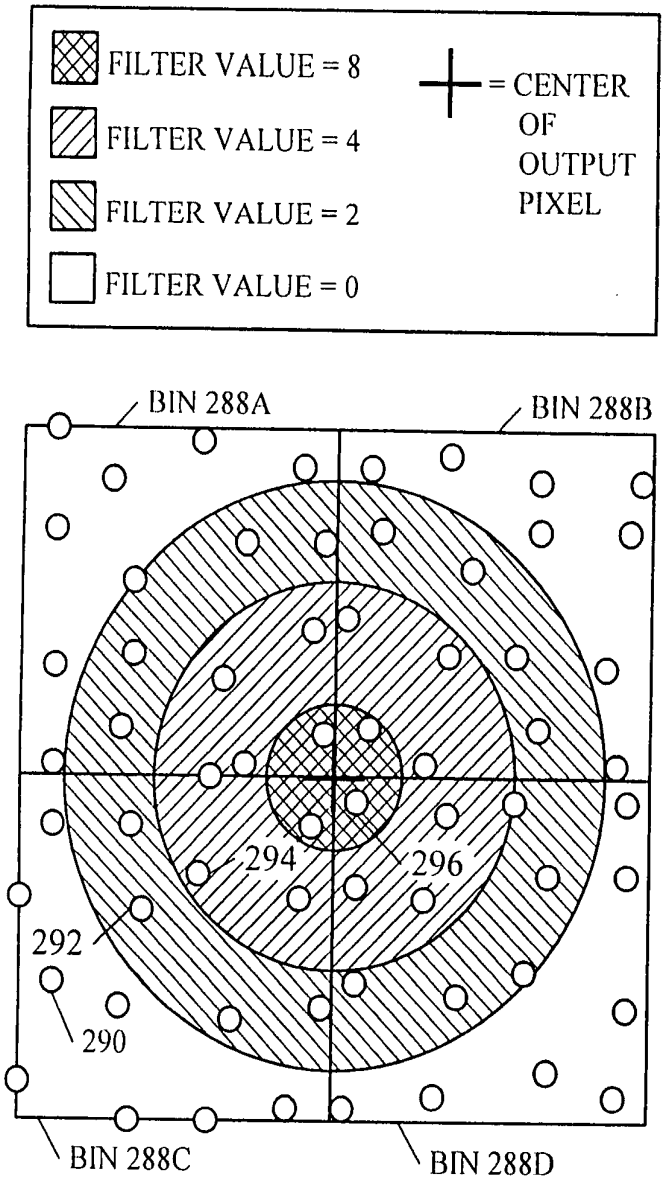

300
Sample 190
R = 120
G = 200
B = 40
A = 150
FILTER VALUE = 0

302
Sample 192
R = 140
G = 180
B = 50
A = 160
FILTER VALUE = 2

304
Sample 194
R = 150
G = 170
B = 50
A = 180
FILTER VALUE = 4

306
Sample 196
R = 140
G = 170
B = 60
A = 190
FILTER VALUE = 8

308
NORMALIZATION VALUE = 0+2+4+8 = 14

310
UNNORMALIZED OUTPUT PIXEL

R = 120*0
+140*2
+150*4
+140*8 = 2000

G = 200*0
+180*2
+170*4
+170*8 = 2400

B = 40*0
+50*2
+50*4
+60*8 = 780

A = 150*0
+160*2
+180*4
+190*8 = 2560

312
NORMALIZED OUTPUT PIXEL

R = 2000 / 14 = 142.9
G = 2400 / 14 = 171.4
B = 780 / 14 = 55.7
A = 2560 / 14 = 175.7

FIG. 14

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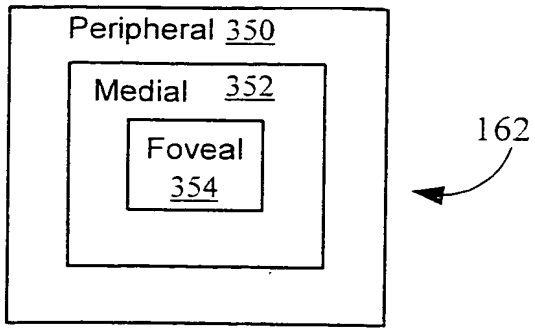


FIG. 15

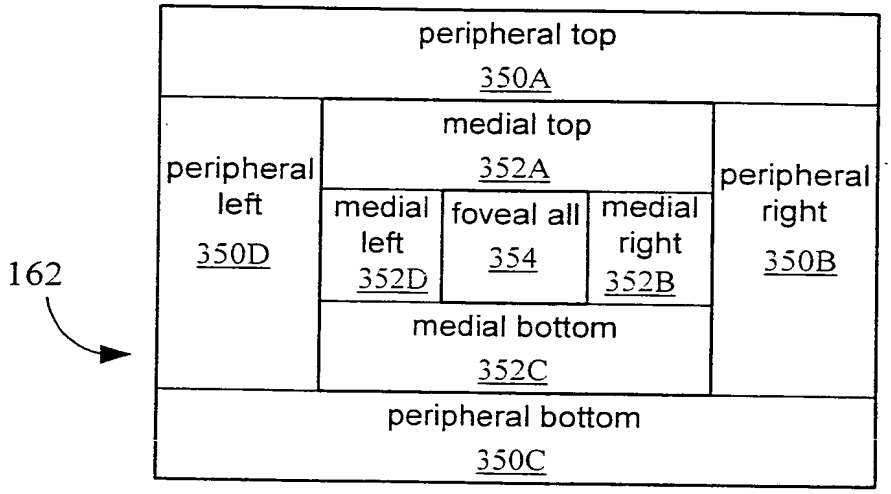


FIG. 16

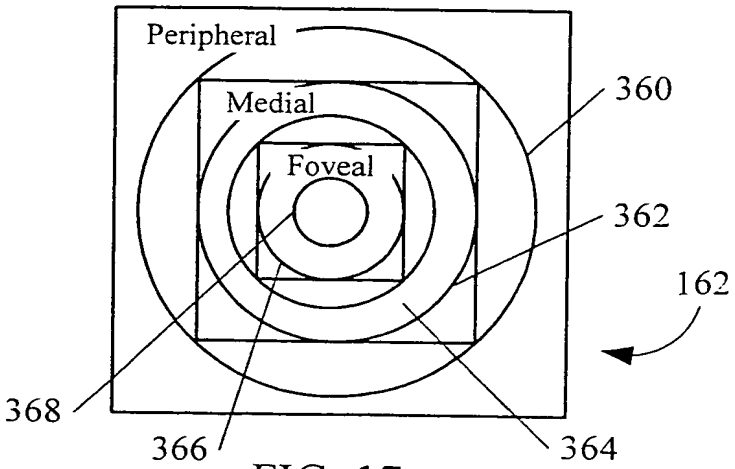
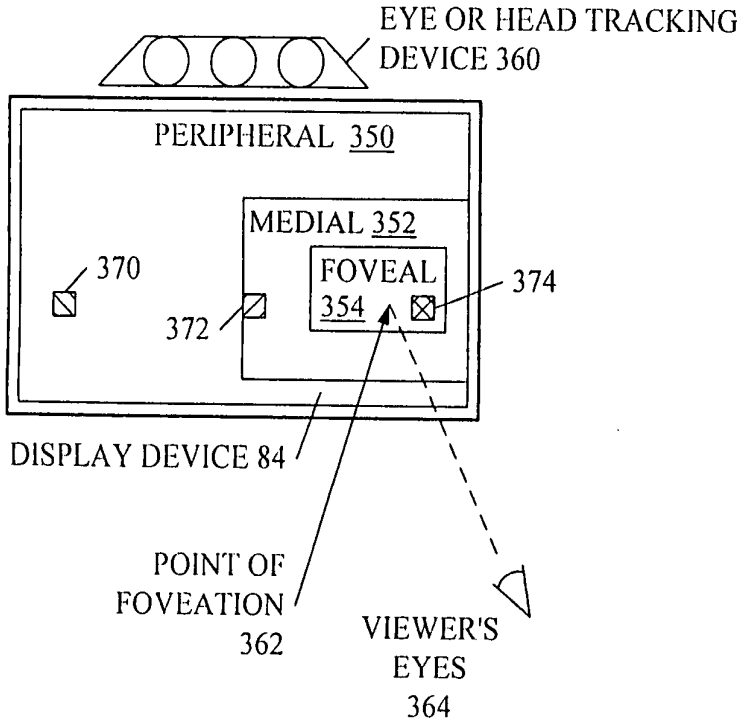
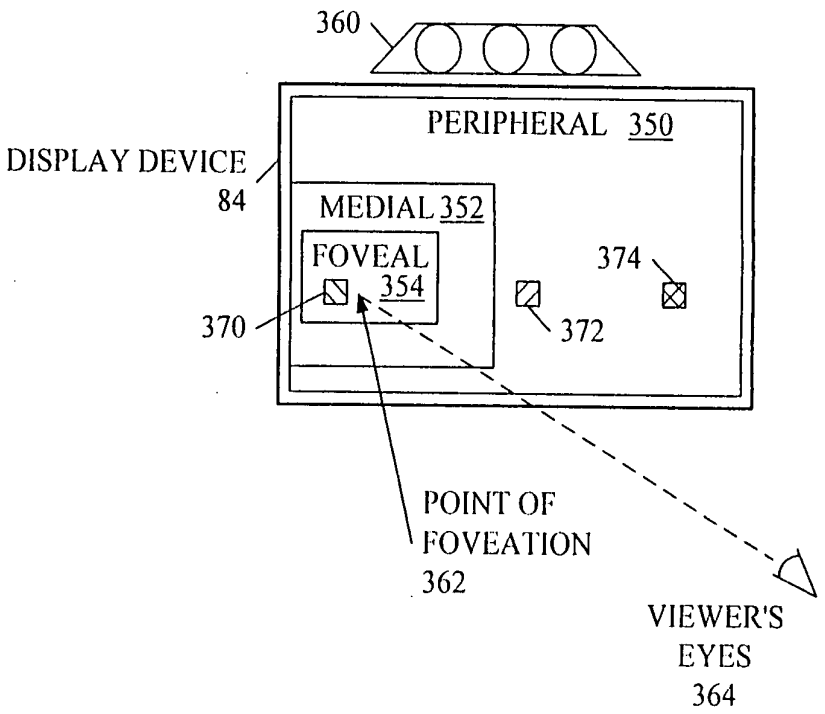


FIG. 17



- FOVEAL REGION = 8 SAMPLES PER BIN
  CONVOLUTION RADIUS TOUCHES 4 BINS
  TOTAL = 32 SAMPLES MAY CONTRIBUTE
- MEDIAL REGION = 4 SAMPLES PER BIN
  CONVOLUTION RADIUS TOUCHES 4 BINS
  TOTAL = 16 SAMPLES MAY CONTRIBUTE
- PERIPHERAL REGION = 1 SAMPLE PER BIN
  CONVOLUTION RADIUS TOUCHES 1 BIN
  TOTAL = 1 SAMPLE MAY CONTRIBUTE

FIG. 18A



- PERIPHERAL REGION = 1 SAMPLE PER BIN
  CONVOLUTION RADIUS TOUCHES 1 BIN
  TOTAL = 1 SAMPLE MAY CONTRIBUTE
- PERIPHERAL REGION = 1 SAMPLE PER BIN
  CONVOLUTION RADIUS TOUCHES 1 BINS
  TOTAL = 1 SAMPLE MAY CONTRIBUTE
- FOVEAL REGION = 8 SAMPLES PER BIN
  CONVOLUTION RADIUS TOUCHES 4 BIN
  TOTAL = 32 SAMPLE MAY CONTRIBUTE

FIG. 18B

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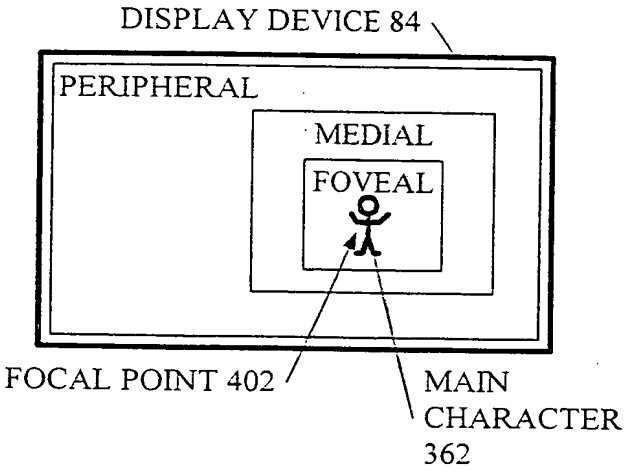

FIG. 19A

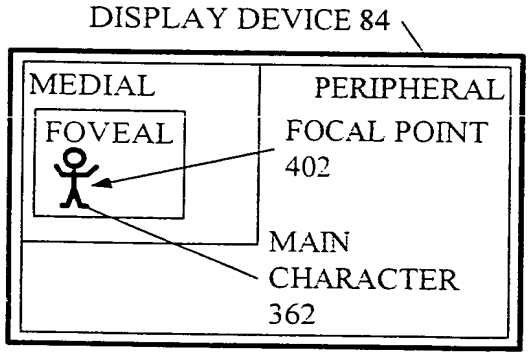

FIG. 19B

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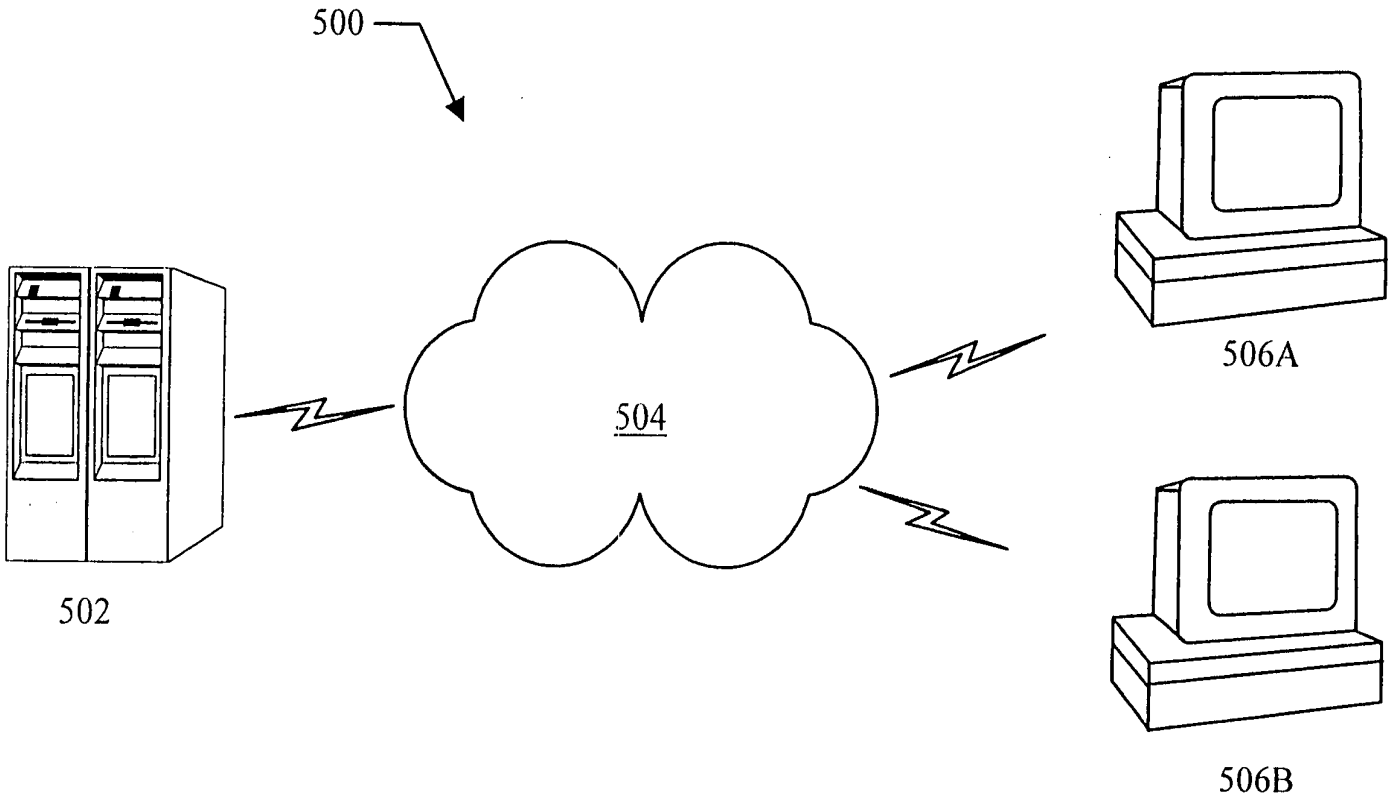

FIG. 20

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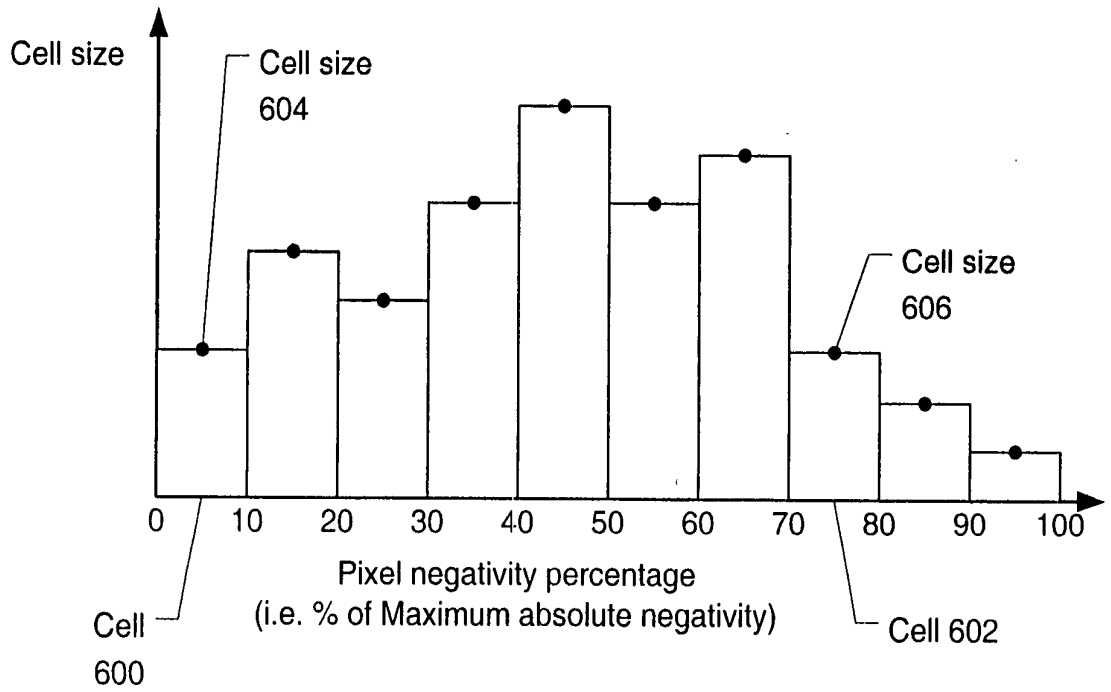

Figure 21

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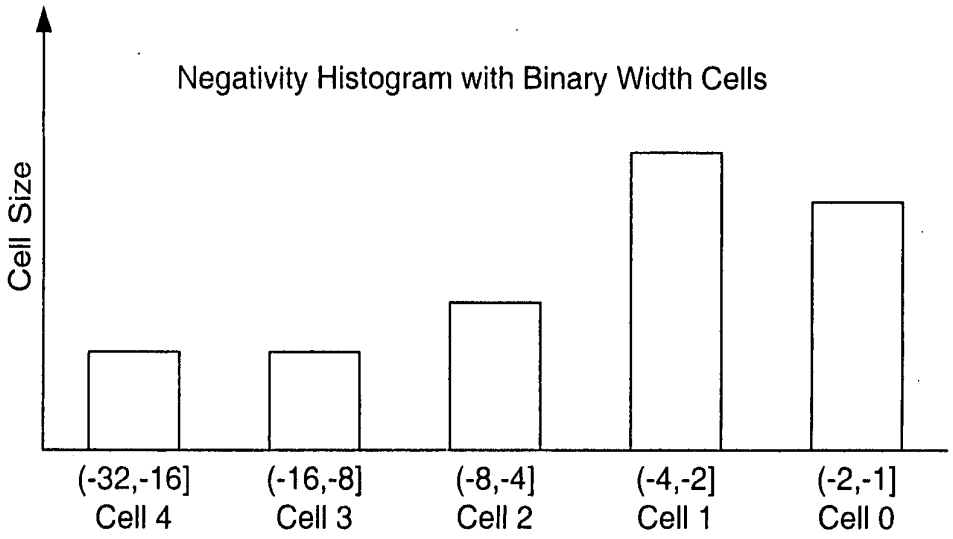
JC08 BBC



Each Cell defined by a ranges of pixel negativity values of the form (A,B]

Fig. 22

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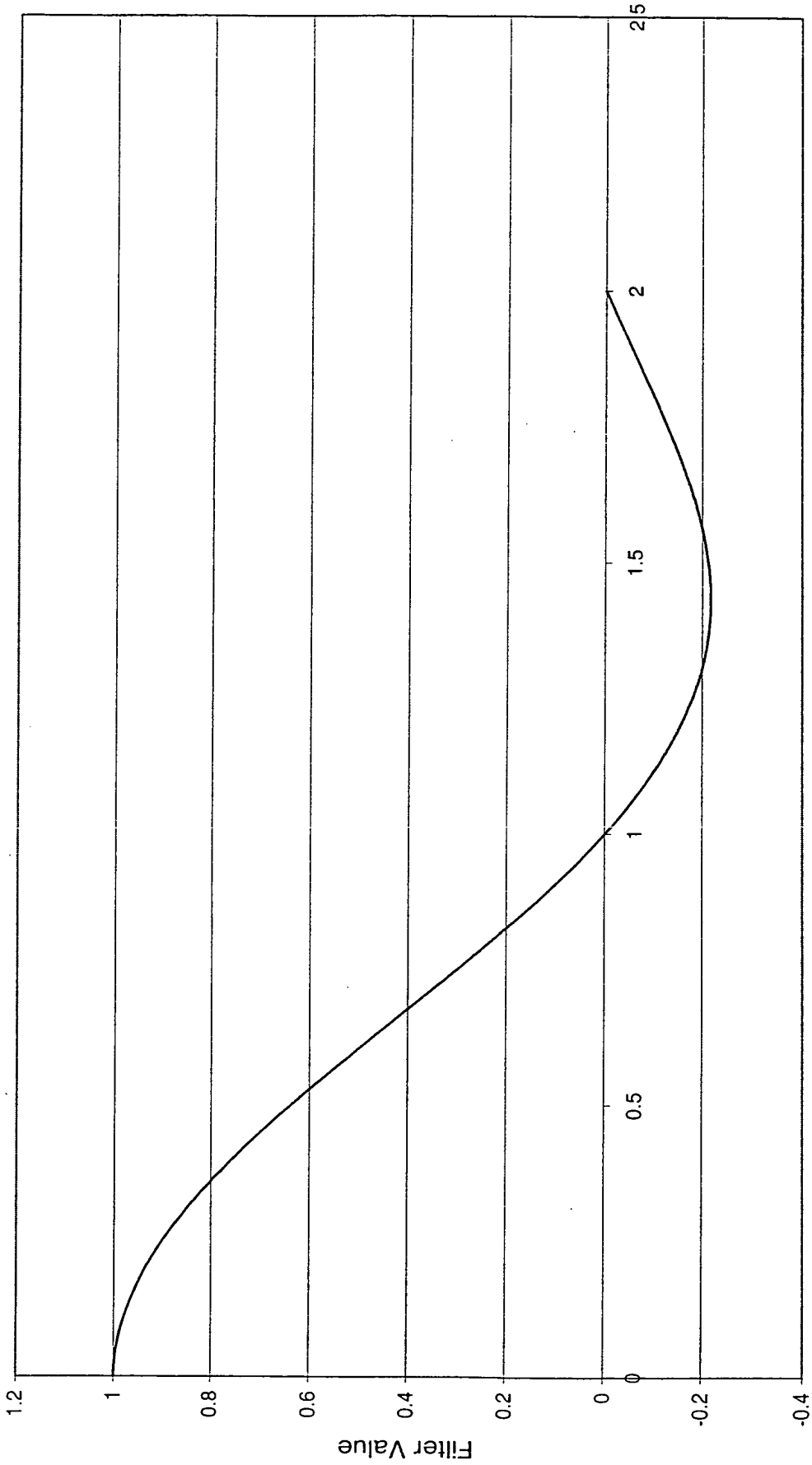

Fig. 23A Truncated Sinc Filter

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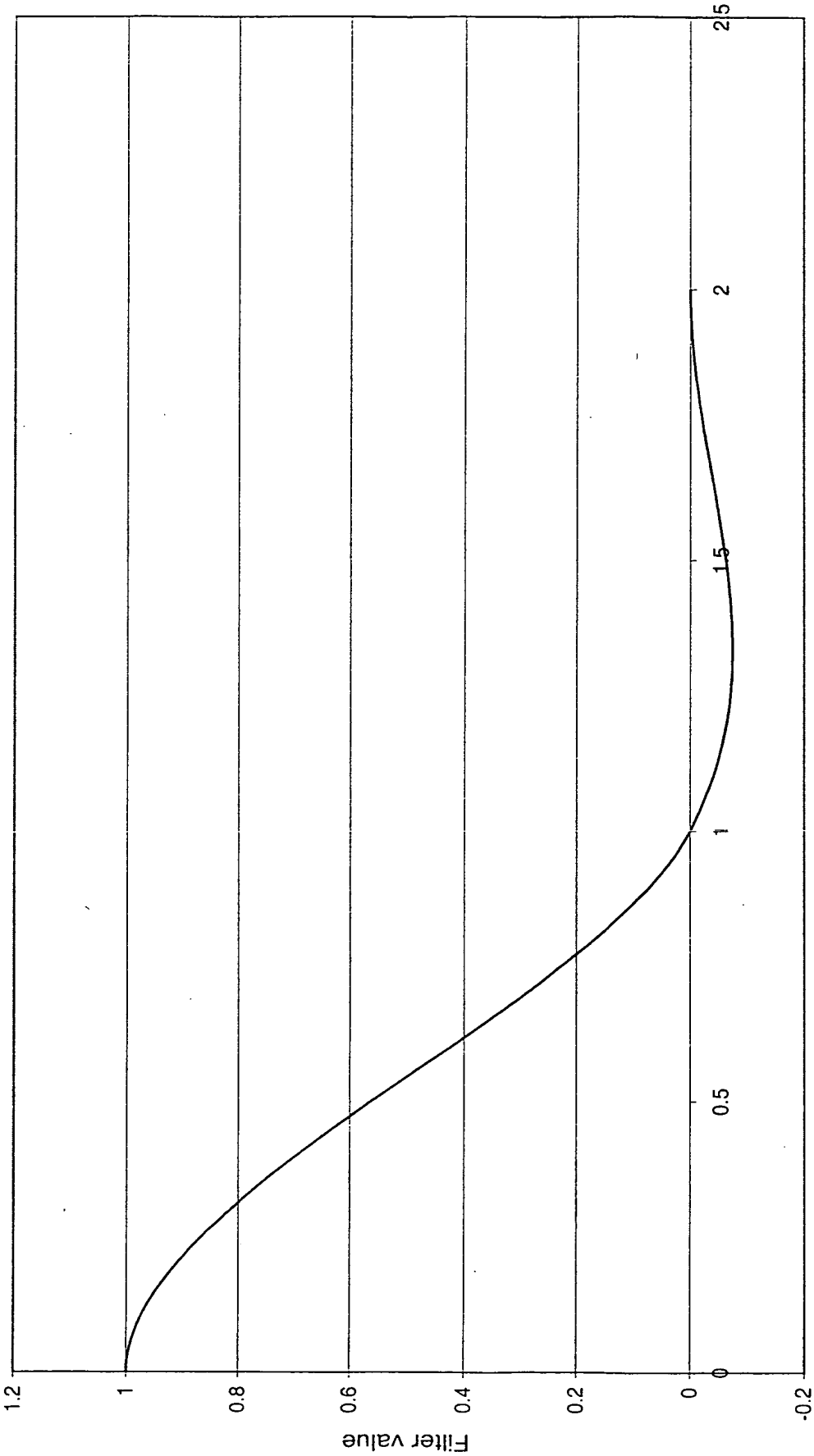

Fig. 23B Catmull-Rom Filter

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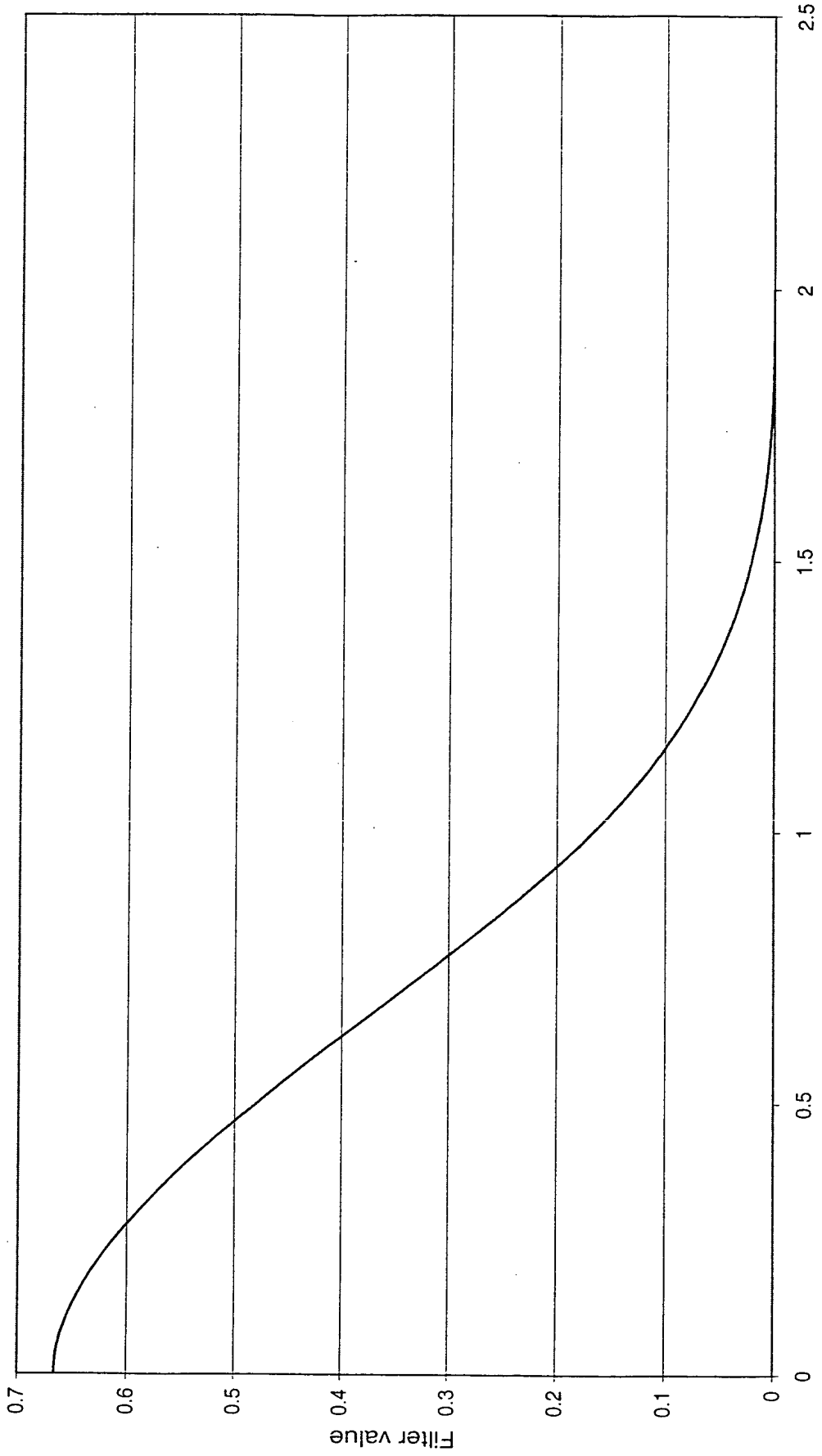

Fig. 23C Cubic B-Spline

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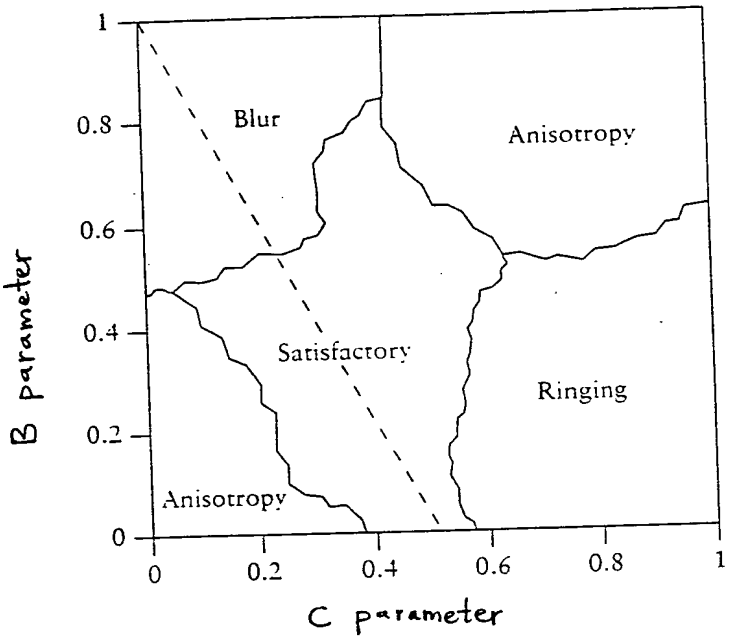

Fig. 23D

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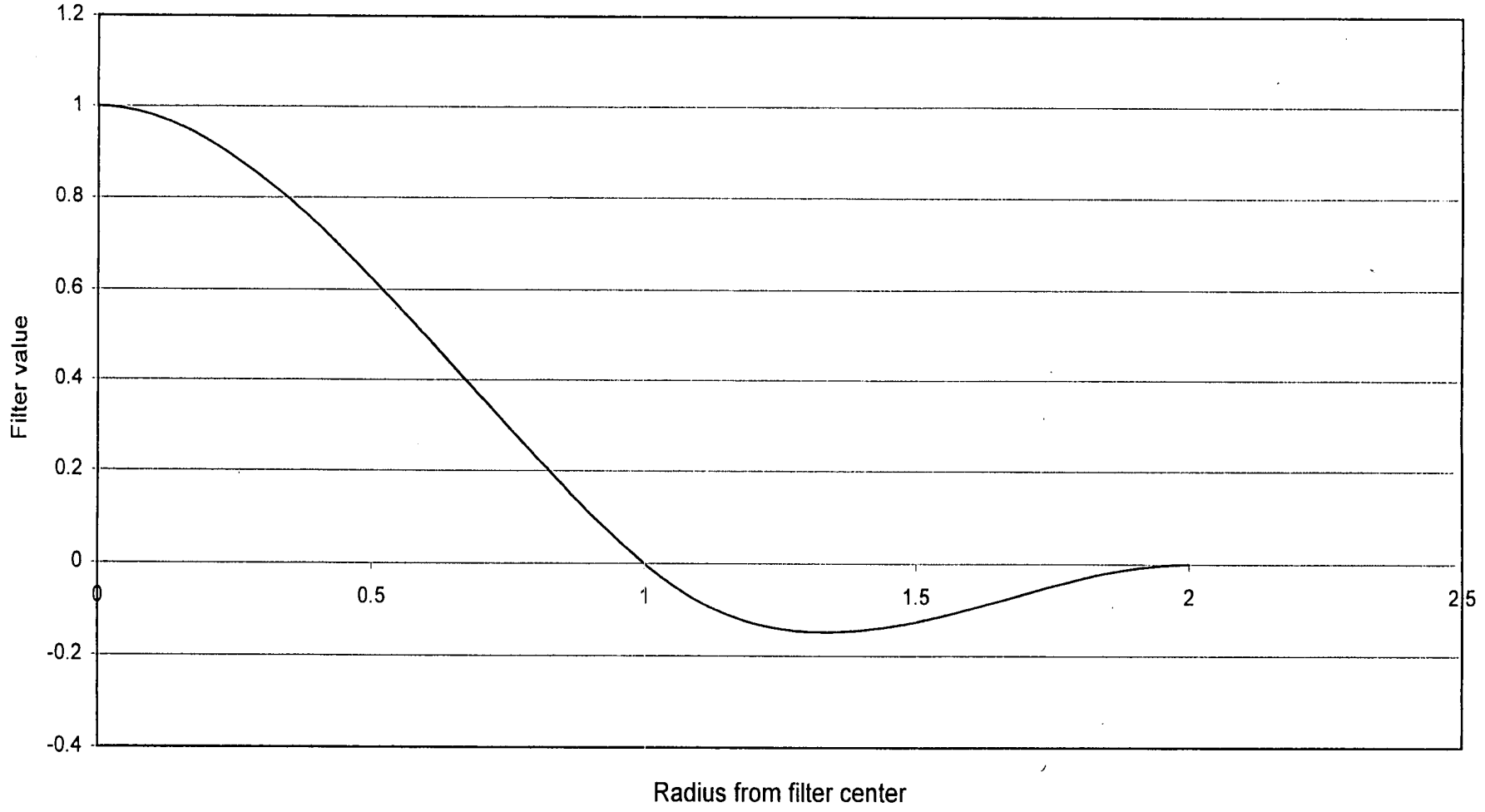
Fig. 23E Cardinal cublic spline,
i.e. Mitchell-Netravali filter (0,1)



OIPE JC&B
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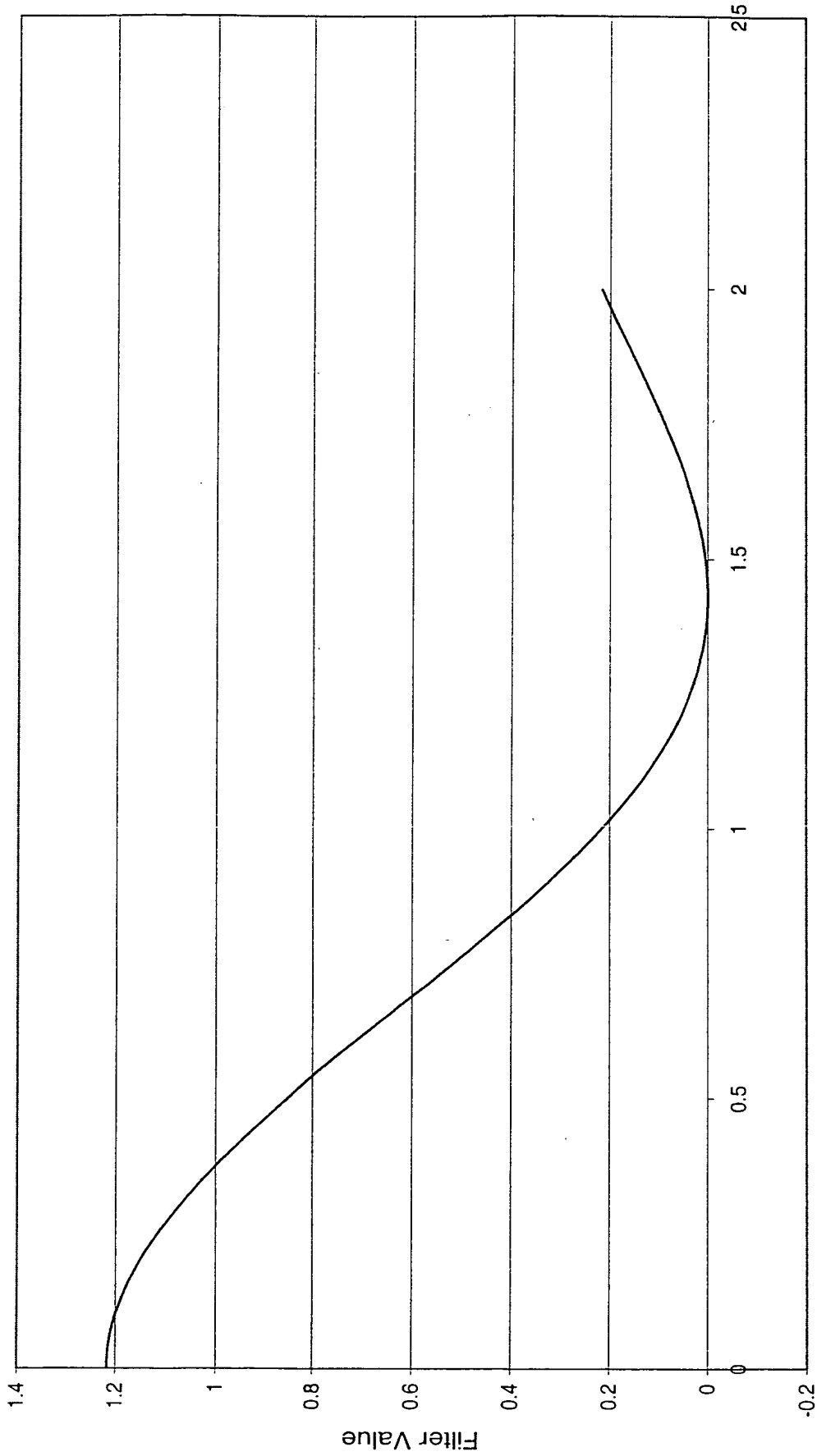

Fig. 24 Upward Shifted and Truncated Sinc Filter

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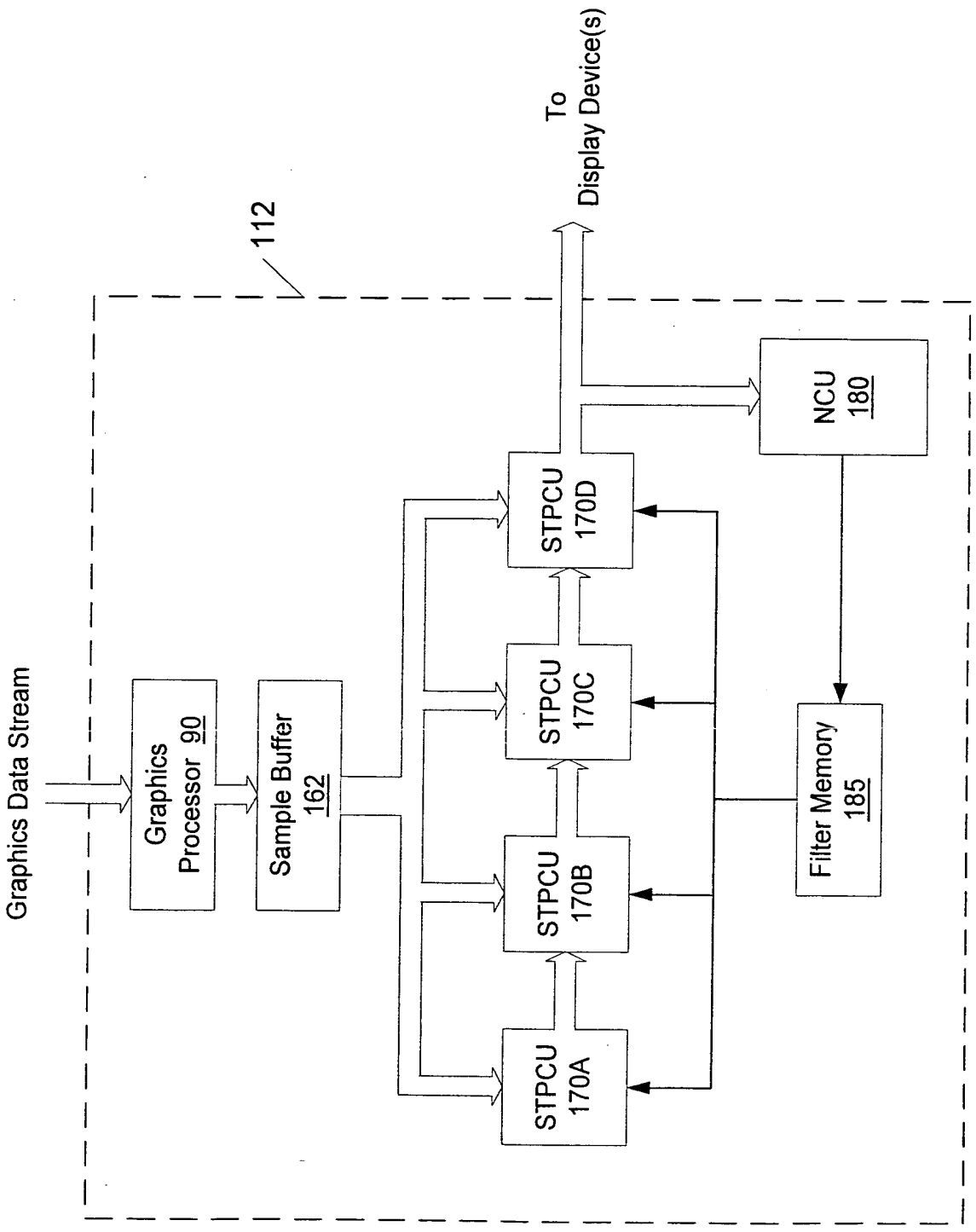

Fig. 25

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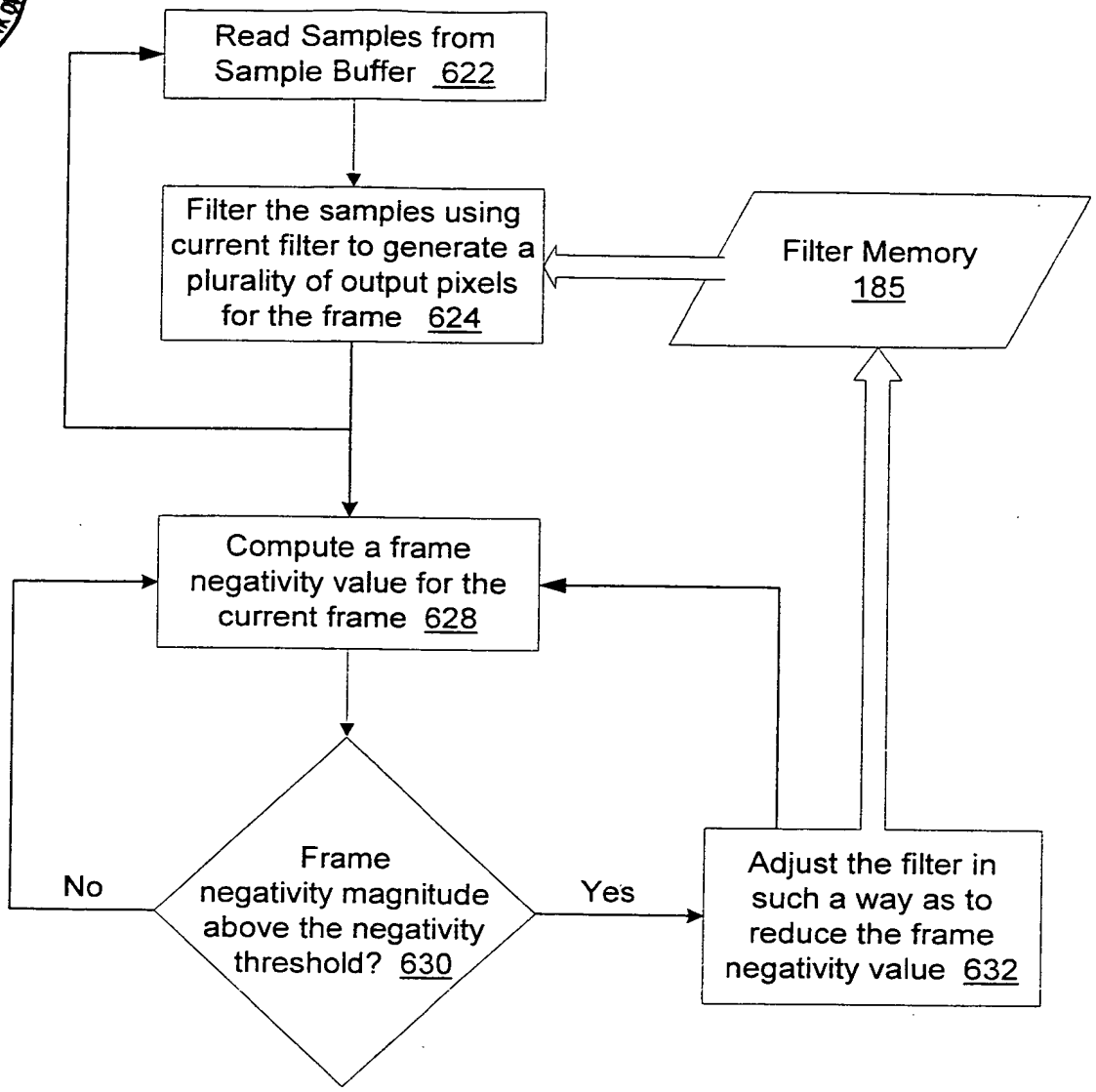

Fig. 26

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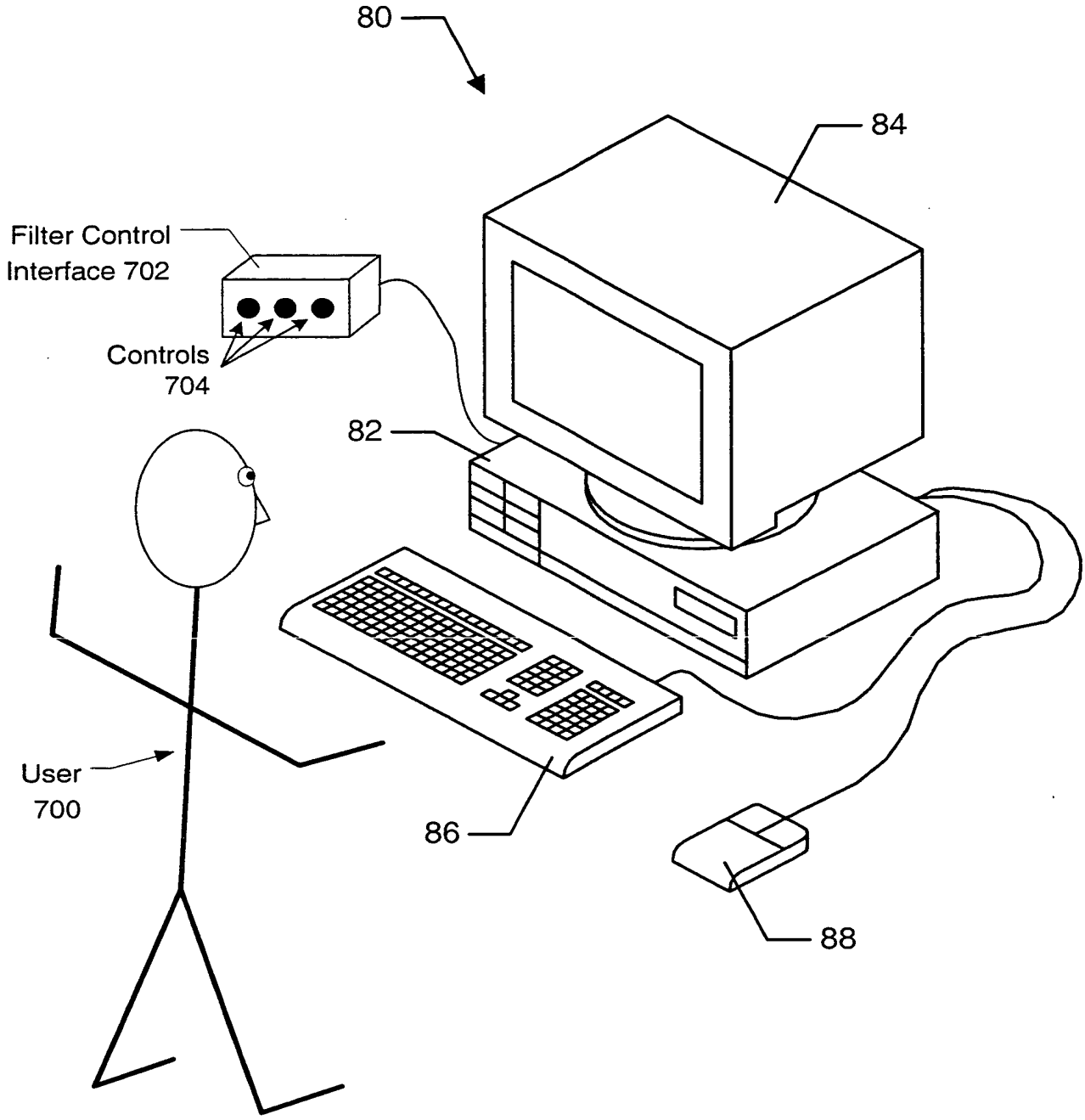

Fig. 27

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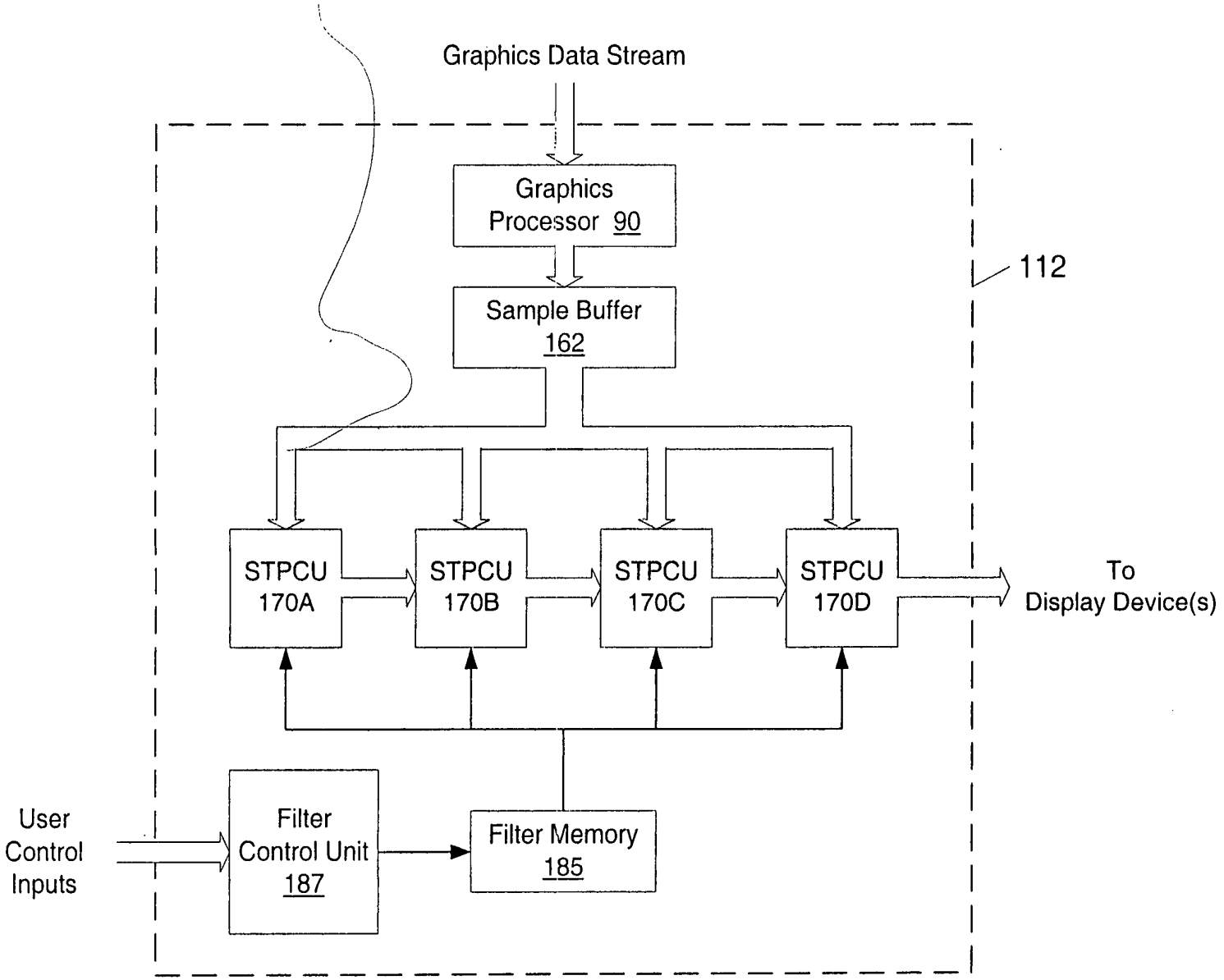

Fig. 28

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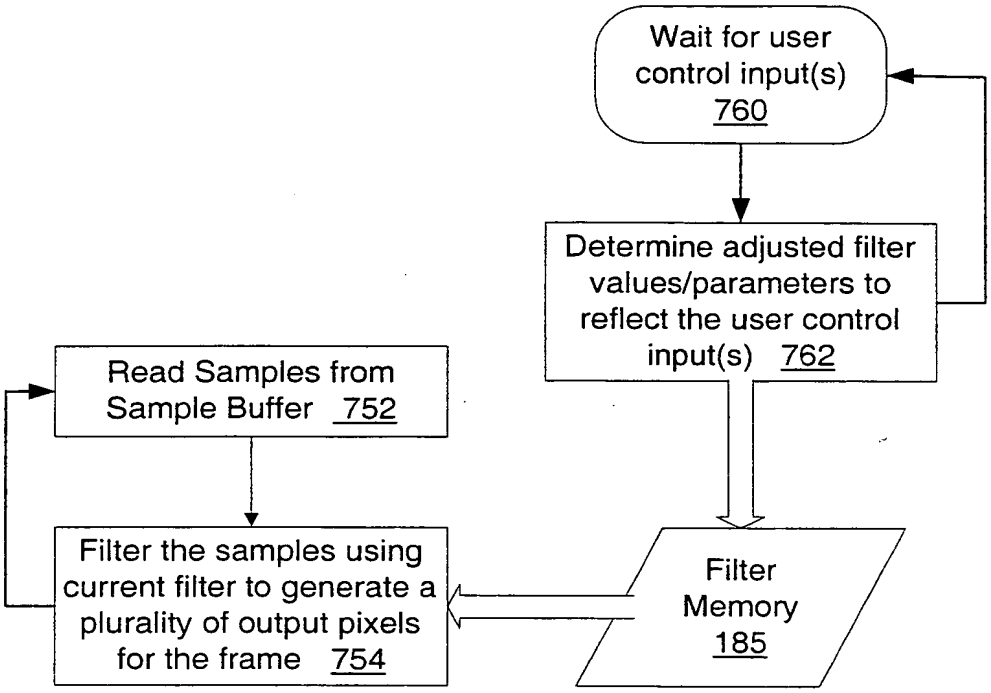

Fig. 29

OIPE JC86
NOV 0 3 2003
PATENT & TRADEMARK OFFICE

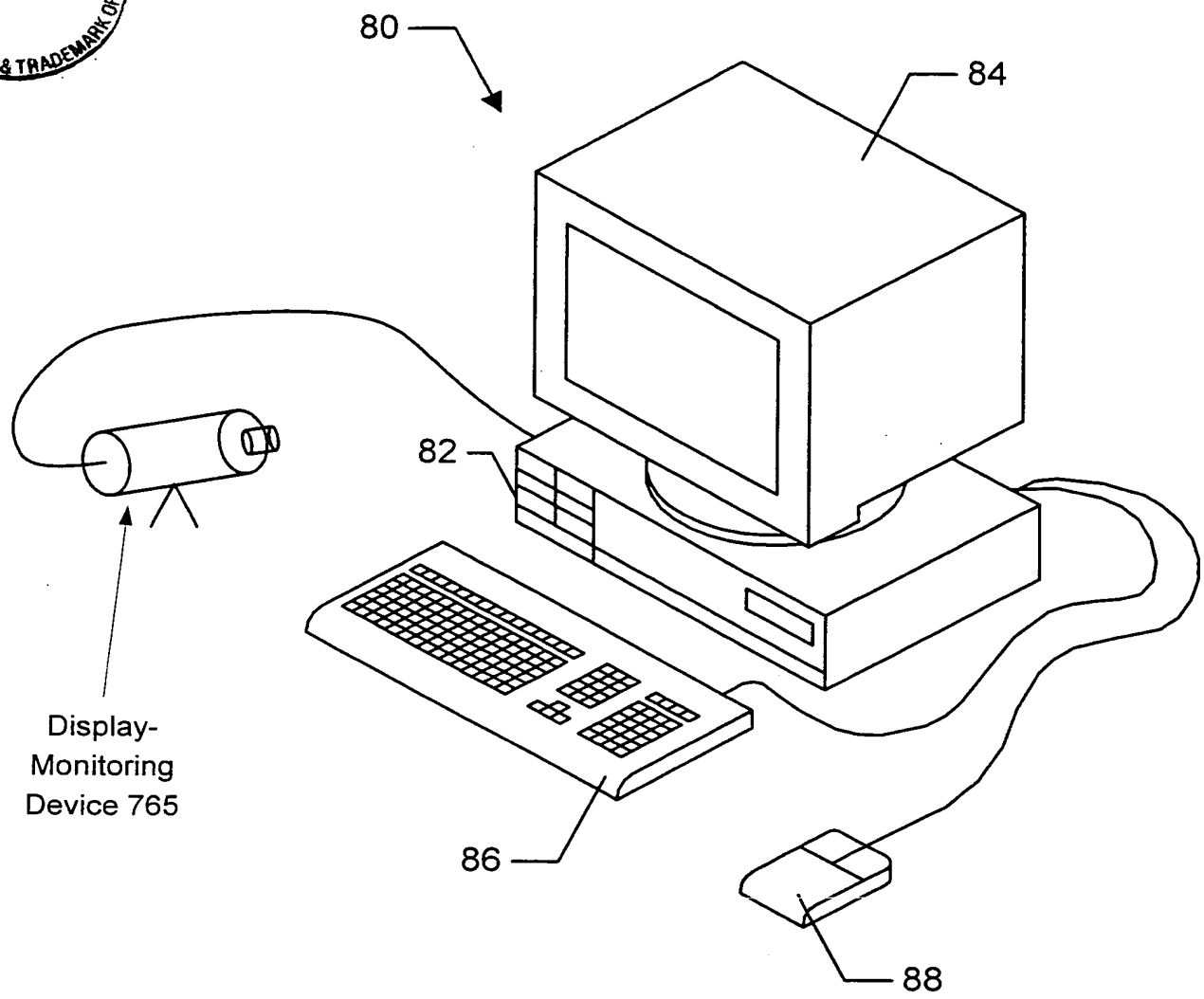

Figure 30

OIPE JC88
NOV 0 3 2003
PATENT & TRADEMARK OFFICE

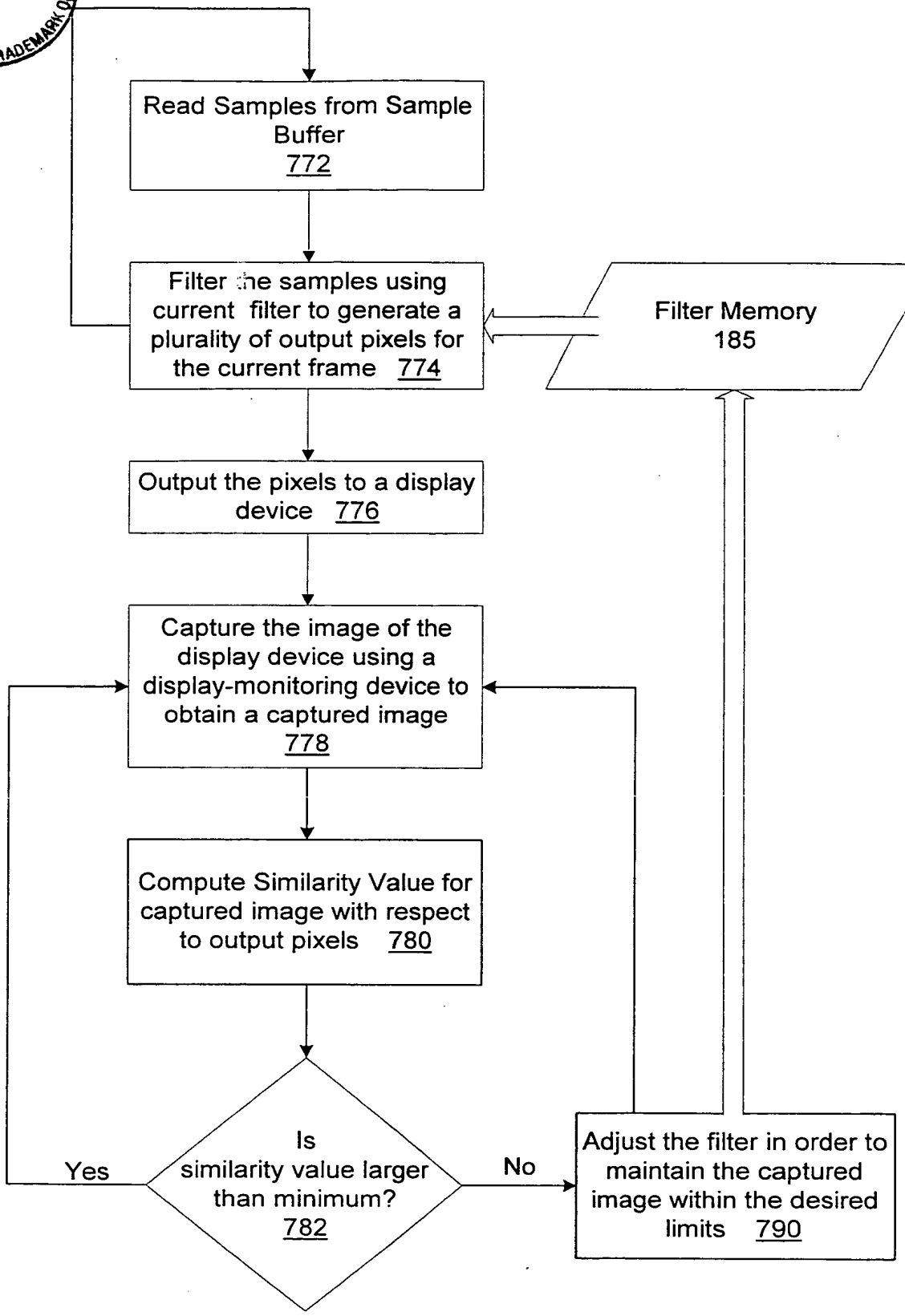

Fig. 31